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CIVIC CENTERS.

BY JOHN DE WITT WARNER.

The Fine Arts Federation at New York, through its constituent societies—National Academy of Design, New York Chapter American Institute of Architects, American Water Color Society, Society of American Artists, Architectural League of New York, American Fine Arts Society, Municipal Art Society, Society of Beaux Arts Architects, National Sculpture Society, National Society of Mural Painters, and New York Water Color Club—representing the art interests of the city, both from public and professional standpoints, in answer to repeated suggestions and queries as to New York's first need from an art standpoint, have recommended provision for an "United" Fine Arts Exhibition building. As to details of this it suggests:

That this building should be a home for contemporaneous art in New York City, and that it should be so planned and administered as to attract and instruct all classes whether professional or non-professional.

That this building should be of a monumental character, and that no commercial considerations—such as the renting of portions thereof for business purposes—should be entertained.

That it should contain adequate galleries for exhibitions of contemporaneous art, of a character more important than can be held in any building at present available; and that it should include every facility for the centralization of the interests and activities of the art societies of this city.

That it is the sense of this committee that, to be suitable for its purposes, the site of this building should be in the Borough of Manhattan, above Fourteenth street, and as near to the centre of the city as possible; and that it should face upon some great thoroughfare, or upon an open square.

That the site required for this building should contain about forty thousand square feet.

That it is the sense of this committee that the cost of such a building as is required, exclusive of site, would be at least one million five hundred thousand dollars.

That the administration of the building should be vested in an incorporated society with a board of trustees, to be formed as soon as occasion may require.

That proper legislation should be obtained to secure exemption from taxation; and that some reasonable guarantee should be provided toward the maintenance of the property, either by endowment or by municipal appropriation.

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This recommendation was prefaced by certain suggestions that show the idea of a civic centre to have been present to those who joined in the report quoted from.

If the substance of the following resolutions seems somewhat vague and inadequate, the committee wishes to state in extenuation that it is advisedly so. As it is impossible for a committee to foretell how, or when, or whence the benefaction may come, it has seemed wiser to leave many important details untouched. It is not inconceivable that some day in the near or far future * * * some scheme may be evolved for municipal improvement that may carry with it, either by purchase or by right of eminent domain, some large space for the aggregation of its monumental buildings—some noble square, for instance, or avenue lined with equally noble buildings that would rival, if not surpass, those of foreign cities. Such being the case, the committee has confined itself merely to generalities, which may be modified according to the exigencies of the moment.

To an extent that is scarcely suggested by the specific recommendations quoted, the project is in the public interest, rather than that of the art professions.*

In view of the consequent propriety of presenting this plan from the standpoint of public interest, MUNICIPAL AFFAIRS is puzzled to guess why what seems to it a most important consideration, was not urged, viz.: The urgent need, from a practical as well as æsthetic standpoint, of dignified, effective and convenient Civic Centres for our great cities; the essential factor in such a centre for Manhattan that such a building as that planned would supply, and the overwhelming educational advantage that would thus be secured.

This omission is all the more strange since late years have been those in which our people have come to appreciate such matters, the last few months those in which most intelligent discussion of them has been had, and the last few weeks those in which, in the reports made to and by the United States Senate Committee of the District

*Several of the constituent societies of the Federation are so well housed, and their special needs already so much more liberally provided for than could be expected in such a building, that the immediate result of its erection would be rather to inconvenience them and reduce the value of their present property, than for a generation or more to advantage them; while in the case of none is it probable that by the time such a building as now contemplated shall be ready for use, any accommodations that such a building would provide will compare favorably with what the society would otherwise have at its disposal This situation, however, has been fully canvassed; and it is, therefore, not in the immediate interest of each society, but rather in the general cause of art—especially of art education—which all agree must ultimately be greatly favored by the concentration and association proposed, that the societies have united in support of the plan outlined.

On the other hand, the very extent to which each of the constituent societies has of late progressed in providing for itself, shows how desirable it is that plans for such a building as that proposed, be so promptly progressed as, when matured and in operation, to have their advantages discounted by as little as possible of sacrifice by individual societies.

of Columbia, the subject has been more thoroughly discussed, fully worked out and definitely proposed with reference to a great capital than ever before in a single group of documents, or at one time—though from the time of Chicago's "White City" of 1893, there have been constant recurrences to the idea.*

It is, indeed, suggested that the committee in charge of the United Fine Arts Building project is conducting so broad an inquiry that suggestions as to a civic centre for this city may well be within its scope. Useful as this may prove, however, the main point in this connection may be pressed at once without waiting for the Federation either to overcome its modesty or qualify itself to meet all curious for information.

From the earliest times all have agreed that to mass at the central or most conspicuous point of a city the public or quasi-public buildings needed by government or people was the most effective fashion of dignifying the city and emphasizing its greatness, while experience and

E. g. House of Representatives, Fifty-third Congress, Report on Public Buildings and Grounds at New York City, December 21, 1893.

It therefore gives but an inadequate idea of the government business at New York to state that it involves the constant attendance and labor of some 6,000 officials and employes, and is constantly increasing in extent and perplexity beyond even the comprehension of one who has not lately and specially examined it.

This enormous business is at present accommodated by some forty-five buildings or parts of buildings. Of these, seven are owned by the Government and the remainder rented. The seven so owned include the custom-house, sub-treasury, the assay office, the United States court house and post office, the United States river, dock and barge office, the United States appraiser's warehouse, and the U. S. Army building. Taken together these are worth far more than the entire rented quarters, and they stand upon ground the value of which, separate from the buildings, is probably above $12,000,000. With two exceptions the buildings upon each piece of ground could be duplicated at far less than the value of their sites, and either on account of original unfitness (in some cases having been built for other purposes) or lapse of time, have become so inconvenient or crowded as, from a business standpoint, to be an actual damage to the ground they occupy—the loss and inconvenience resulting from their use being such as long ago to have made it profitable to have torn them down for renewal on their present site or elsewhere. In addition, the growth of the city and the development of business has so altered conditions that in most cases the present buildings stand upon ground which, though not particularly convenient for their purposes—in most cases far otherwise—would promptly sell at prices ample not merely to procure most spacious and convenient locations elsewhere, but largely, if not completely, erect proper buildings thereon. * * * It is the fact that such buildings at the city of New York will constitute the most extensive series of great public buildings on the continent outside of Washington; that an opportunity is thus offered for the development of civic architecture on a creditable basis never elsewhere attempted, and never even suggested elsewhere than in the architectural triumphs at Chicago; that late legislation has made it possible for buildings hereafter planned to be constructed by the Federal Government to have equal facilities for securing economy together with architectural merit, and business convenience equal to that at the avail of private parties; that the awakened public spirit of the architects of the country, and New York in especial, and the civic pride of that great city might be counted upon for co-operation.

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logic have concurred in the convenience and pleasure thus subserved. It is true that this is more common and obvious in the case of the older towns, and that the extent to which modern cities are, in essence, no longer merely or mainly fortresses, court residences, or cathedral seats, may have lead some to forget that civic centres are as much needed now as ever.

But the fact was that in these old towns it was rarely the special fitness of the site for all the buildings there erected that caused them to be built there, but rather the common convenience and pleasure of citizens that so generally selected some focus as that about which should be grouped the more important buildings to which they must resort. And, therefore, while the encircling ramparts may have been razed and Ring-strassen or Circle Boulevards laid out in their place, though elected officials may have replaced the dynasty that built the palace, though the cathedral may be as neglected as formerly it was thronged, the same human nature and human convenience that made the old city centres will not be satisfied except by new ones at which shall be centred the public life of the city of to-day.

To illustrate: The plan and view of Ninevah, Babylon or Thebes was as radically different from both the Acropolis and the Forum as were these from each other; but all three were alike in this: Each was the expression of its civic life and could not well have existed without such a focus of its energies—this because, its citizens being men, not brutes, their public life was highly organized. For similar reasons the mediæval cities did the same; and, as one after another modern city becomes self-conscious, it tends toward that more perfect adjustment of its public functions and facilities that results in one or more civic centres.

Human nature remaining the same, example is far more telling than argument; and of example there is no end—a most interesting fact in this connection being that in each case as these civic centres develop they are more and more characterized by provision for the fine arts. Of ancient instances, numberless examples could be given. I note but two—the best known.

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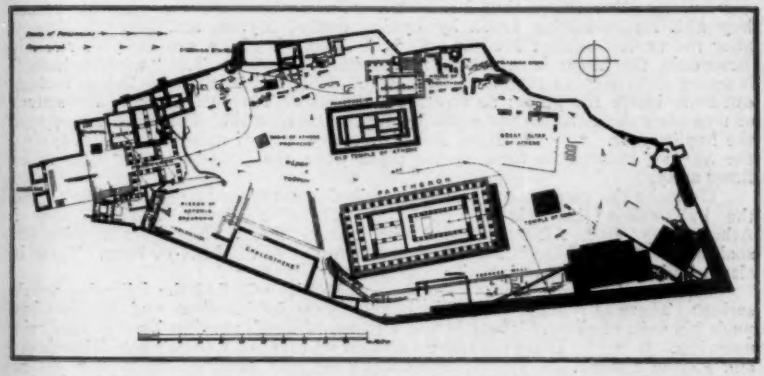
Historic Examples.—The Acropolis.

The Greek Acropolis had doubtless once been a fortress, but had ceased to be such so long before historic time that it is rather an instance of a civic centre as developed by the city than of a survival of conditions that have passed away.

To religion and art— to culture as religion and religion as expressed by art—were Athene's people vowed; and the Acropolis for other reasons having become the natural centre, hither, alike, to the pride and convenience of her citizens, gravitated the more characteristic expressions of their patriotism and public life.



THE ACROPOLIS.

It is impossible now to reproduce even the details of its plan, much less a perspective that will even suggest its richness and beauty; but under the ruins are yet traces of the foundations upon which stood structures of which we know somewhat from their history or remains; and from Pausanius' note books we can appreciate the character if not the details of the "Glory that was Greece."* In imagination we can

*The Propylaea has a roof of white marble, and the size and beauty of the blocks were remarkable even when I saw it. I cannot say with certainty whether the figures of horsemen represent the sons of Xenophon or are merely decorative in character. On the right of the Propylaea is the temple of Nike Apteros.

On the left of the Propylaea is a building with paintings. Among those that time had not completely effaced were Diomedes carrying off the statue of Athena from Ilion, and Odysseus at Lemnos taking the bow of Philoctetes. Among the paintings is also represented the slaying of Ægisthus by Orestes, while Pylades is killing the sons of Nauplios, who had come to the assistance of Ægisthus. There is also a picture of Polyxena on the point of being sacrificed beside the tomb of Achilles. * * * Polygnotus has also painted Odysseus approaching the maidens, who, with Nausikaa, are washing the linen beside the river; * * *

see the citadel where—as there safest from sacrilege—were set up one after another shrines of its tutelary gods—steadily growing in number as its myths developed, ever more beautiful and rich as the weal of the city witnessed divine favor, or growing wealth prompted its

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There are other pictures, among them a portrait of Alcibiades with the trophies of his victory in the horse-race at Nemea. There is also Perseus, on his return to Seriphos, bringing the head of Medusa to Polydectes. * * *

There is a Hermes just at the entrance to the Acropolis called Hermes Propylaios, and there are also figures of the Charites. * * * The Athenians set up a bronze lioness in memory of this woman (Leaina), and beside it an image of Aphrodite, said to be the offering of Kallias and the work of Kalamis. Near by is a bronze statue of Diitrephes pierced with arrows. * * * Near the statue of Diitrephes (I do not mean to mention inconspicuous statues) are two images of gods—one of Hygieia * * * and one of Athena, also called Hygieia. * * *

Among other things that I saw on the Acropolis of Athens were the bronze boy with the sprinkling brush by Lykios, son of Myron, and Myron's Perseus after the exploit against Medusa. * * * There is also a sanctuary of Artemis Brauronia, the image in which is by Praxiteles. * * * The "wooden horse" is set up in bronze on the Acropolis. Menestheus and Teucer are shown looking out from inside the horse; so also are the sons of Theseus. Among the statues of men after the horse is one made by Krities representing Epicharinos ready for the hoplite race. * * * Here there is also a statue of Athena striking Marsyas the Silenus, because he took up the pipes when the goddess meant them to be flung away.

Opposite the monuments I have described is a representation of Theseus and the bull called the Minotaur. * * * There is also a Phrixos, son of Athamas. * * * After this come other statues, then a Herakles strangling the snakes. * * * There is Athena rising from out of the head of Zeus. There is also a bull set up by the Council of Areopagus; * * *

Persons who prefer works of skill to antiquities will find the following worth seeing: There is a man wearing a helmet, done by Kleoitas, and Kleoitas has made his nails of silver. There is also a figure of Earth praying Zeus to send rain upon her. * * * There are statues also set up there of Konon's son, Timotheos, and Konon himself. A group representing Procne resolved upon her design against Itys, together with the boy, was dedicated by Alcamenes. There is also a representation of the exhibition by Athena of the olive branch and of the wave by Poseidon. There are two images of Zeus—that of Leochares, and one called Zeus Polieus. * * *

The whole subject of the pediment over the entrance to the Parthenon is the * * * birth of Athena, and that of the pediment at the back is the contest of Poseidon with Athena for the land. The image itself is made of gold and ivory. In the centre of the helmet is a figure of a sphinx, * * * and on each side of the helmet are gryphons wrought upon it. * * * The image of Athena stands upright, clad in the long chiton, and upon the breast is wrought the head of Medusa in ivory. She holds a Nike about four cubits high, and in the other hand a spear; at her feet lies a shield, and close beside the spear is a snake. On the pedestal of the image is a representation of the birth of Pandora. * * * There is only one statue there, as I can testify, that of the Emperor Hadrian. In the entrance is one erected, for many remarkable actions, to Iphikrates. Opposite the temple is a bronze Appollo * * * said to have been made by Pheidias. * * *

On the Acropolis of Athens there are statues of Pericles, the son of Xanthippos, and of Xanthippos himself, who fought against the Persians in the sea-fight at Mykale. The statue of Pericles is on one side, while on the other, near that of Xanthippos, is Anacreon of Teios. * * * The female figures near were made by Deinomenes, and represent Io and Kallisto. * * *

Near the south wall are figures of about two cubits in length, representing the war with the giants, who dwelt of old round about Thrace and the isthmus of Pallene; the war of the Athenians against the Amazons; the action at Marathon against the Persians; and the destruction of the Galati in Mysia. * * * There

people toward more lavish offerings for its preservation. At first called on as the handmaid of Religion, Art became adopted as its sister; and the Acropolis gradually became not so much the seat of divinity as the treasure house of whatever was most precious in architecture, sculpture and painting—deposited there in honor of the gods and to the never sated delight of the art loving public, for whom here as elsewhere the art museum was an appreciated benefaction of the State to its people.

The Forum.

The Roman Forum is an even more characteristic example. For it was never specially a fortress or place of worship or royal residence, but a low-lying spot whither the people about naturally came to do business, and which, as about it rose temples and palaces, became more and more the heart of Rome's civic life. From the foot of the Capitoline Mount it stretched past the Palatine toward the Colosseum, which on that side limited the Forum vicinage.*

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is also a statue of Olympiodorus. Near the statue of Olympiodorus is a bronze statue of Artemis called Leukophryene. * * *

There is also a building called the Erechtheion. In front of the entrance is an altar dedicated to Zeus Hypatos. * * * As you go in there are three altars. * * * The paintings on the walls represent the race of the Butadae. * * * There is also the imprint of a trident on the rock. * * *

* * * The object which received the greatest veneration throughout the country for many years before the union of the demes, is the statue of Athena on what is now called the Acropolis; * * *. Legend says this statue fell from Heaven. * * * The golden lamp dedicated to the goddess is the work of Kallimachos. * * * In the temple of Athena Polias is kept a wooden Hermes, * * *. Offerings worth notice are, among the ancient ones, a folding-chair made by Daidalos, and among the Persian spoils, the breast-plate of Masistios, who led the cavalry at Plataeae, and a scimitar said to have belonged to Mardonios. * * * The Temple of Pendrosos adjoins the Temple of Athena.

The tip of the spear and the crest of the helmet of this Athena are visible after leaving Sunium to persons approaching Athens.

*At the south, on the twin summit of the Capitoline Hill, one was originally crowned with the "Arx" or citadel, and one with the "Capitol"—the Temple of Jupiter Optimus Maximus. But long before the date of our plans, the "Arx" was known as the site of Juno Moneta's temple—afterwards Rome's mint—the sacred stone whence the veiled Augurs looked toward the south as they presaged, and a temple of Concord dating from the second Punic War. In the plaza before the Capitol, public meetings were held. Close at hand the Priests each month proclaimed the kalends, nones and ides. Here were the temples of Jupiter Feretrius, where the spolia opima were deposited of Fides and of Mens, of Venus Erycina, of Honos et Virtus, of Jupiter Tonans and Mars Ultor and Jupiter Custos—the oldest built by Romulus and the others by one after another Roman ruler from Numa to Augustus and Domitian.

The Palatine continued these civic monuments. On its western slope were the fig tree beneath which the wolf suckled the twins of Mars, the hut where Romulus lived and the cave of Pan. Higher up the shrine of Victory, oldest in Rome, the Temple of Mater Magna and Curia Saliorum, where relics of Romulus were kept, and the Temple of Jupiter Stator overlooked the Forum. Here also were the halls of the Thirty Curiæ, the great stone altar "Roma Quadrata," and

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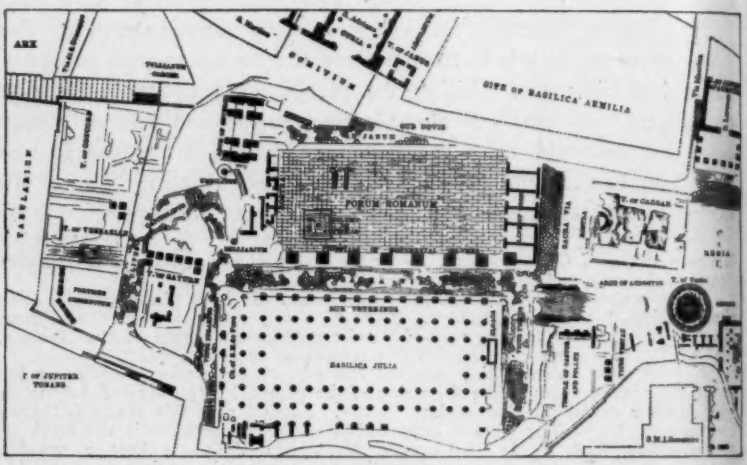
Thus hemmed in, the Forum, the centre of Rome's civic life where the people most frequently gathered, was overlooked by the Comitium, devoted to Patrician assemblies, behind which rose the Senate House. At the west the Sacred Way wound up the slope to where towered the Capitol with other temples and buildings of state. At the south rose the Palatine, and to the east first the Shrine of Vesta and the Convent of the Vestals, and beyond this the Temple of Venus and Rome separated the Forum from the Colosseum.



PLAN OF THE ROMAN FORUM.

Closer and farther reaching as centuries passed, there crowded upon and about it the basilicas or columned plazas where centered one after another activity crowded from the main Forum. But here all centered. Here was the spot early fixed as the center of the city—"umbilicus urbis Romæ." Close at hand was the golden mile stone—"miliarium aureum," whence distances were measured to the ends of

shrines to many gods and attributes, including Bacchus, Jupiter Victor, and Jupiter Propugnator.

From early times the Palatine was a favorite place of residence until under the emperors rose those imperial dwellings, themselves named from the hill, that in turn gave us the word by which royal residences were thenceforth known—the "Palace" of Augustus, having been the first of such, and the Golden House of Nero, the best known. Here in the court of the Temple of Appolo in colonades of Numidian marble, with capitals in gilt bronze, were fifty statues of the Danaides facing fifty equestrian statues of the Sons of Egypt, and the Greek and Latin Libraries of Augustus. At is base was the Colosseum, the centre of Rome's sport, as was the Capitol of her dignity, or the Palatine of her luxury.

the earth along the roads that bound the empire together. Here were the Rostra, where, from a platform decked with the trophies of Rome's first great naval victory, her orators for centuries swayed her people. As the "Tribunal" in the Comitium became inadequate, other magistrates were allowed judgment seats near at hand, so that the courts also remained centered here.

Northward the hoary Temple of Janus overlooked it; to the east was the Temple of Saturn where the state treasure was kept, and the oft-rebuilt Temple of Concord, where the Senate sometimes met. In this, as we learn from Pliny, was Rome's great Art Museum, which contained in his time the richest collection on earth. To these were

VATICAN MOUNT.

constantly added other temples, and shrines, statues and galleries. Then triumphal arches and columns thickened in and about it until it became such a centre of human life as never before or elsewhere has been, but which in one form or another must be repeated before any world city of the future can focus and serve the energies of its time as well as did Rome those centered there.

Modern Instances.

Not merely are modern instances more in point, but they include alike every city of importance sufficiently old to have learned its needs and met them as well as each of the few cases where a great city was planned in advance. European cities are those whose experience is our best guide; and here we have only to select the more characteristic.

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Rome.

As the seat of the Papacy, Rome has had the needs and opportunities of a capital longer than any other modern city. And just as on and beside the Capitol and the Palatine, the imperial city had centered, the Papal city now gravitated toward the Vatican Mount, consecrated by the blood of the martyrs here slain by Nero in picturesque torment, and the long line of Popes, led by Peter, each of whom for two hundred years died for his faith.

So the tomb of Hadrian became the Papal castle of St. Angelo. On the very site of Nero's Circus, Constantine built, and Pope Julius II. and his successors rebuilt, St. Peter's Church, while beside it, for fourteen centuries, the Vatican Palace has grown above the grotto that still remained a fortress of heathendom for a century after Rome was Christian. The group thus includes the strongest castle, the grandest cathedral, the oldest and most extensive palace, the greatest and most valuable collection of books, paintings and statuary extant—all these on a historic site amid beautiful parks—a fitting centre for Catholic Christendom.

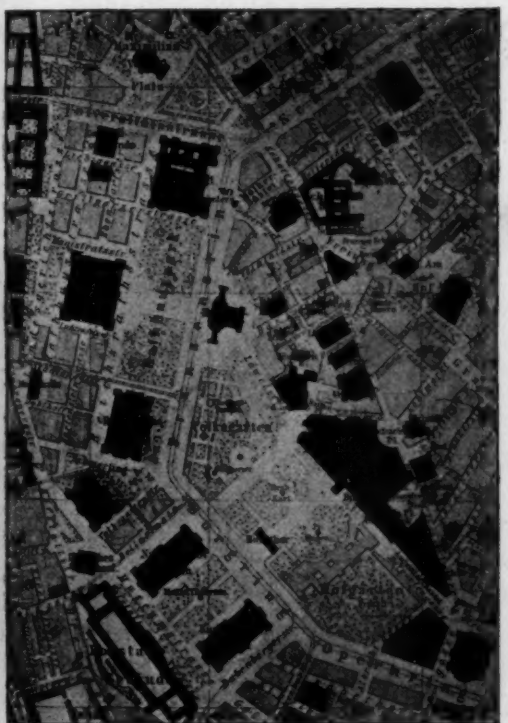
THE QUIRINAL, ROME.

On the other hand as the capital, the political centre of united Italy, the Quirinal gives to Rome another of the civic centres we have in mind. Taking the Quirinal Palace with its park as a centre, we have to the north the Barberini palace and the Museum of Industrial Art; to the west the grand Fountain Trevi, beyond which is the Chamber of

Deputies; to the southwest the Quirinal Theatre, the palaces Colonna, Consulta, and Rospigliosi and the Bank of Italy; to the southeast the National Gallery of Modern Art; and to the east and northeast the Ministry of War, the Ministry of Finance and the National Museum. All this with many another church, theatre and palace helping to fix the developing centre of modern Rome as the Italian capital.

Vienna.

In Rome we have the ruins of the Forum, the survival of what has been the seat of temporal as well as the spiritual rule, and the growing centre of Rome as a city of to-day. In Vienna we have the survival and growth that, without destroying or leaving the old citadel, has turned it into a modern civic centre.



THE "BURG" NEIGHBORHOOD, VIENNA.

The removal of the walls of the old fortress city has left a grand "ring" avenue, and just outside of it, opposite the old Royal Garden, in new parks have been erected additional public buildings; so that not merely has the old citadel or "Burg" been enlarged into a modern palace of generous proportions, but it is simply the largest of a group that—in picturesque site, in every charm of nature and art, and in the mutual aid of

each feature toward the common effect—it would be hard to rival. To the right of the Burg, as it faces the People's Park and the "Ring" avenue, are the Foreign Ministries, the Department offices, the Court Theatre and other public buildings, including within the "Ring" the Bourse, or public exchange, and, outside the "Ring," the University and beautiful Votive Church, adorned inside and out with famous works of art. In the rear are minor public buildings; to the left is the Imperial Opera House elaborately decorated with statuary and paintings, and the Albertina or Archducal Library with superb works upon history, war and art. Adjoining the Burg is the Imperial Library with its priceless collections; in front the great citadel gate or the Burg Thor is in Doric style; and in full view across the "Ring" are the Criminal Courts and the War Offices of the Commander in Chief; the Palace of Justice, the Houses of Parliament and the City Hall (all superbly enriched with sculpture and painting); the great Imperial Museums of Natural History and Art respectively; and many another public or semi-public building of artistic character adds its lustre to the vista.

CIVIC CENTER OF PARIS.

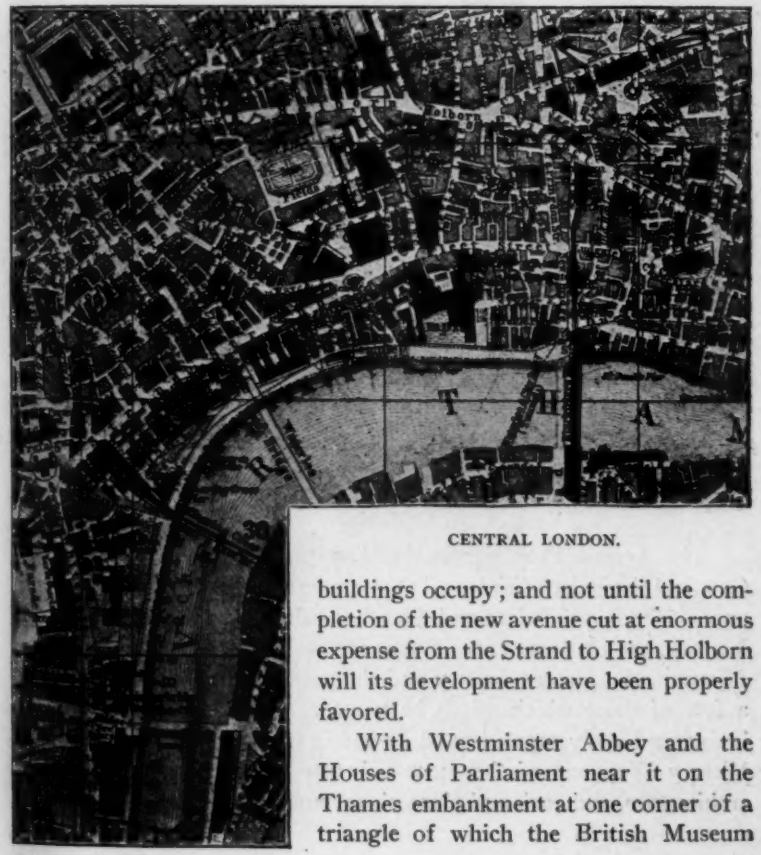
Paris.

In its way, though less formal, the life of Paris is equally localized. On the isle in the Seine, where the old town stood, the Cathedral of Notre Dame, the great hospital of Hotel Dieu, the Palace of Justice and the Prefecture of Police are surrounded just beyond the encircling river by a group which in some respects is first in the world, and which includes the Hotel Cluny, the University of the Sorbonne, the College of France, Ecole

des Beaux Arts, the Mint, the Palais Royal, the Hôtel de Ville, or City Hall of Paris, the National Library of France and the two great Art Museums—the Louvre of Classic and non-contemporary Art, and the Luxembourg of the works of living artists, mainly paintings and sculptures.

London.

London has developed a scarcely less noteworthy civic centre; although it is only of late that the size of the city has been such as to make this term appropriate for so large an area as that which her main

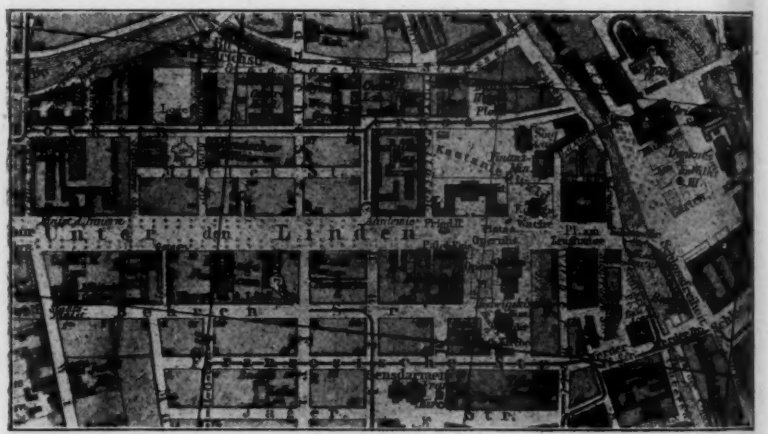


CENTRAL LONDON.

buildings occupy; and not until the completion of the new avenue cut at enormous expense from the Strand to High Holborn will its development have been properly favored.

With Westminster Abbey and the Houses of Parliament near it on the Thames embankment at one corner of a triangle of which the British Museum

and St. Paul's Cathedral make the others, we have Westminster Hospital, New Scotland Yard—the headquarters of the Metropolitan police with its turreted mass—the group of public offices—Home, Foreign, Colonial and India—the Treasury Building, the Horse Guards or General War Office, the Admiralty, Somerset House—Public Offices—the Temple with its schools of law, the great Gothic pile in which the royal courts of justice are held, the massive new Record Office, the Patent Office, Lincoln's Inn, Gray's Inn, Newgate Prison, the British Museum with the first library in the world, the National Gallery of Art, and the National Portrait Gallery, with an occasional monument and historic building.



UNTER DEN LINDEN DISTRICT—BERLIN.

Berlin.

The Avenue Park, Unter den Linden, between the Brandenburg Gate and the Palace Gardens, is the centre of a group of world importance. The Royal Palace and the other palaces, the Arsenal, the Royal Library, the University, the Opera House, the Old Museum, the New Museum, the Picture Gallery and the great National Gallery, are but a few of those which might be named. Of all these, decoration is lavish, and lately supplemented by heroic statuary, making the famous Victory Way one of the most elaborate combinations of sculpture, architecture, and park and plaza plans extant.

Madrid.

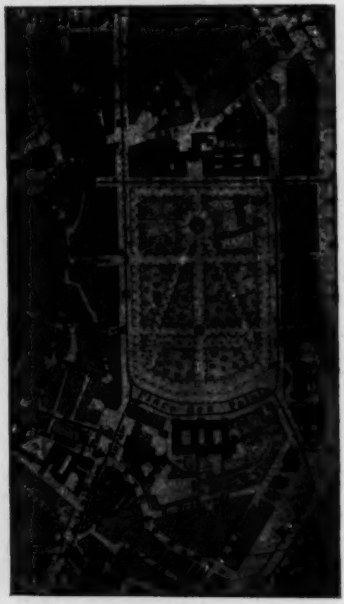
In Madrid, a city of comparatively late foundation, the oldest of living cities laid out for a metropolis, we have in one quarter of the city about the Campo del Moro the Royal Palace and Armory, with its world renowned collection of arms and armor, the department buildings and the Cathedral yet unfinished. While, at the whim of the Monarch who planned it, separated by a long distance, the real centre of a Spanish capital is grouped in and about the great Parque de Madrid and the parkways, avenues and plazas that surround it.

THE GOVERNMENT OF MADRID.

Here are the Ministry of War, the Bank of Spain, the Fountain of Cybele, the monument to the patriots who fell in resisting Napoleon, the Royal Exchange, the Artillery, the Museum, the House of Deputies, the Mint, the Palace of Justice, the Palace of Congress, the Royal Church, the Natural History Museum, the Archæological Museum, the Royal Academy, the National Museum of Paintings and Sculpture, the National Library, and the Museum of Modern Art.

Brussels.

The old hunting grounds of the dukes is now surrounded by the Ducal Palace, the Royal Palace, the State House, the Royal Library, the Museum of Modern Art, the Gallery of Old Pictures and the Palace of the Fine Arts with its collection of sculpture and older paintings, all dominated by the Cathedral of Ste. Gudule and St. Michel.



A BRUSSELS CENTER.

American Cities—Boston.

In America we have scarcely had time to develop such centres and can be said to have planned but one, the development of which has far progressed. But in Boston, between and about the State House and Fanueil Hall, one feels that civic life is concentrating and that to the new Court House on the one side, the Government Post Office on the other and the Custom House a little farther off must soon be steadily added to or substituted for other public buildings now there one after another structure that shall emphasize Boston's claim to be "no mean city."

Albany.

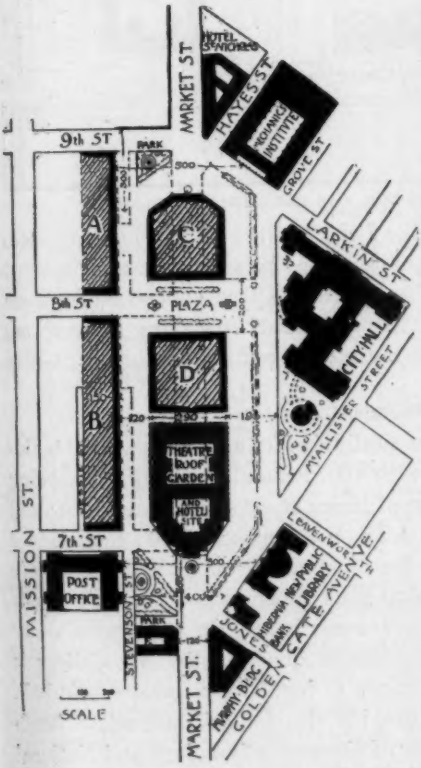
Again at Albany, though the other structures are somewhat dwarfed by the dimensions of the capitol, yet with Academy Square, its classic building to the north, and its own beautiful park from which State street, 200 feet wide, sharply descends eastward; the High School, the State Hall and the City Hall in front, All Saints with its school and cathedral to the north and Union University Buildings but little farther distant to the south—a picturesque site is so appropriately used that it needs but intelligent planning on the part of the New York state authorities and enterprise to improve opportunities which the Cathedral foundation and the University have so far missed to make as characteristic and in its way as impressive a group as a state capital could well develop.

Washington.

In Washington, as is known, we have the example of a city laid out but a century since as the seat of our government; and though neither the White House nor the Capitol group is as yet so completely or systematically developed as to have its proper effect, and the connecting avenue remains almost unexploited, Washington is already one of the world's most effective capitals and is rapidly becoming one of the most beautiful.

Current Projects in the United States.—San Francisco.

American cities, however, are rapidly awakening to the many needs, of convenience as well as dignity and beauty, subserved by appropriate civic centres, and in three cases, more or less definite plans have been discussed.



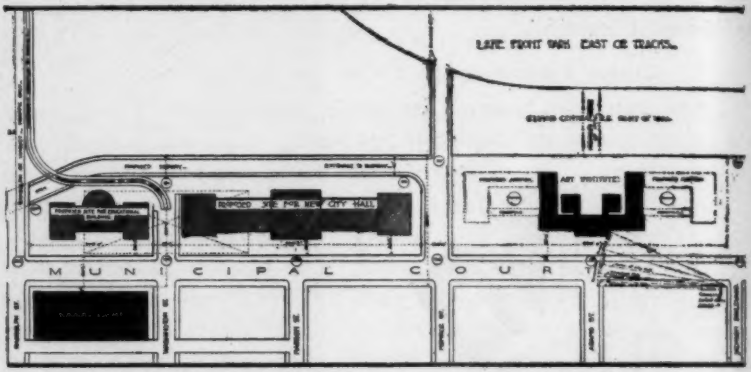
MR. CAHILL'S PLAN FOR SAN FRANCISCO.

In San Francisco it is proposed, by condemning a whole series of blocks adjoining those in which her more important buildings are now located to develop an imposing parkway far to each side of the principal street which now traverses the locality thus to be treated, then to use for additional public buildings or quasi-public buildings — hotel, opera house, etc.—the portions of the land taken not needed for the new avenues. This would provide proper surroundings for the present public buildings, proper sites for those needed, more attractive positions for finer hotels, theatres, etc., than the city now has and a civic centre with parkways and plazas, grand vistas

and building sites such as will make it ever a more and more appropriate centre of a community growing in wealth and taste.

Chicago.

At Chicago this has been one of the problems of late receiving great attention; and Mr. Wight's plan, here noted as one of those most pressed, contemplates the grouping of Chicago's principal public



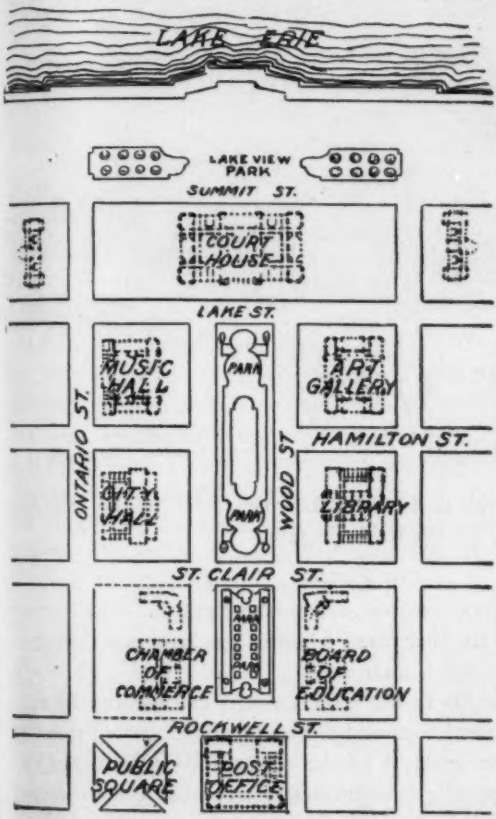
PROPOSAL OF MR. WIGHT FOR THE LAKE FRONT, CHICAGO.

buildings on the land side of the Lake Front Park, so locating them with regard to each other that each shall be a most helpful factor toward the most imposing group possible. With the plazas about and between them and the park with Lake Michigan itself stretching away to the east, this would furnish a most noble civic centre for Chicago, where it is sorely needed.

Cleveland.

At Cleveland it has been practically decided that its new city buildings shall be so planned as, with the Federal building now being constructed, to surround a court of honor overlooking Lake Erie; and it is expected that this will be done on the plans of Mr. Brunner, of which but a hint is given by the illustration. Conditions here are peculiarly favorable. The federal government has completed a new post office, the county needs a new court house, the city wants a city hall, the public library needs permanent quarters, the Art Gallery is seeking for a site, and resources are at hand for a great music hall. To accommodate these and to provide also for jail and school headquarters and include the Chamber of Commerce buildings and National Guard Armory lately substantially built on artistic plans, it is planned

to have the court of honor 350 feet wide and 1,000 feet in length. At one end farthest from the lake would be the post office; at the other end, overlooking Lake Erie, the county buildings. On either side would be grouped the Chamber of Commerce, the City Hall, Music Hall and Art Gallery, Public Library and the school headquarters. The whole group thus planned is well above the lake, which it overlooks. On the lake front below, separated from the court of honor by a narrow tract, it is proposed that a new union passenger station be built, thus making this court of honor an impressive public entrance to Cleveland. Though the greater part of the ground taken is now covered by old buildings and largely given over to squalor and vice, it is so contiguous to the business centre of Cleveland and a ten acre public square that when completed the improvements outlined will be the centre of a much broader area naturally focusing there.

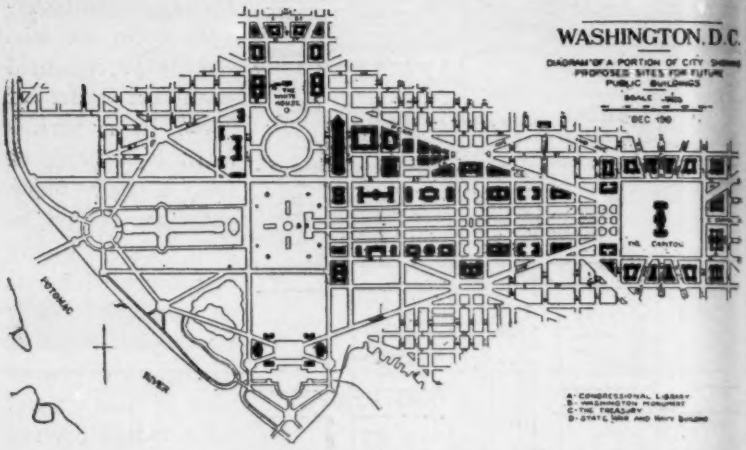


MR. BRÜNNER'S SCHEME FOR CLEVELAND.

Washington.

Of the report of the Burnham Commission, composed of Daniel H. Burnham, Frederick Law Olmsted, Jr., Charles F. McKim and Augustus St. Gaudens, and its plans for the future development of Washington, the public has of late been fully advised. For the purpose of this article it is only necessary to note that its main feature is the

development, beyond anything L'Enfant imagined but in strict accord with his plans, of the Capitol and White House centres that he laid out, as is shown by the illustration below. The Capitol and the White House Squares are on elevations which face each other, leaving the improvements between, in front of the Capitol and along Pennsylvania avenue to serve as the work-a-day government city, the great



public plazas and gardens that stretch between them to the Potomac and proposed Memorial bridge to Arlington.

City Plans.

The advantage of civic centres and the tendency to develop such has not been ignored in the rare cases where it has been practicable, or seemed so, originally to plan a metropolis.

After London's great fire in 1666, her citizens' confidence that their city would soon recover and forever hold its prestige, was equalled by the appreciation in some quarters of the opportunity which that disaster had given for correcting London's defective plan and for laying out a more dignified and convenient city than then existed; and we have Sir Christopher Wren's sketch toward that end.

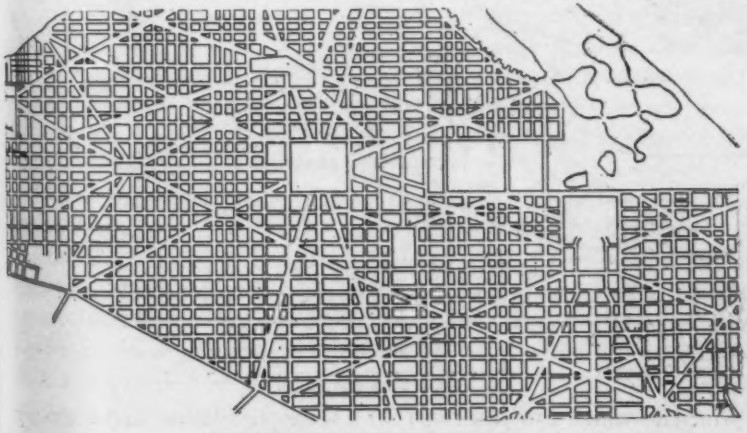
It speaks for itself, and, perhaps, the only comment called for here upon the mistake then made by not adopting some such scheme is to note that to remedy a few of the defects which would thus have been corrected, and to open a single thoroughfare for a few blocks, London has lately entered upon work calculated in advance to cost $3,500,000.

Courtesy of House and Garden

WREN'S PLAN FOR LONDON.

Nearly a century and a half later, L'Enfant, employed to suggest the lines upon which the future capital of the United States should be planned, to his wide observations and careful study had apparently added knowledge of Wren's plan. At least, if he did not, it is still more surprising that in his plan for Washington—though borrowing no detail—he followed the same idea of great civic centres toward which the main thoroughfares should converge, and the relations of which to each other and to the general mass of the city were the chief features.

How far-sighted and successful was his work we have only of late



L'ENFANT'S PLAN FOR WASHINGTON.

begun to appreciate. It is an illustration of this, as well as of the theme of this article, that a hundred years later the distinguished commission, which in the first year of the 20th century reported its ideal of the plan for an appropriate setting in which should be grouped the legislative, judicial, and executive headquarters of the greatest nation on earth, in the main recommended that L'Enfant's plan, so far as it had survived, should be retained, and that, where it had been departed from, it should, in the main, be restored, as the one that would best serve for effectively grouping the dignified and beautiful public buildings at Washington now existing or planned by them—far exceeding any such groups that have ever yet existed, or of which we can for a moment believe L'Enfant could even have dreamed.

Finally, latest of all we have the plan upon which, under the orders of the Czar, is now building Dalny, the eastern terminal of the trans-Siberian Railway—a great city where heretofore there has been neither a city nor occasion for one, and where, therefore, his engineers were free to adopt an ideal lay out.

It needs but a glance to note how thoroughly have been accepted the

DALNY AS PLANNED.

principles which 250 years ago Sir Christopher Wren, and a century since L'Enfant so well applied in their day.

Conclusion.

To return to the point of view whence we started: Useful as in many ways would be, needed as on more than one ground already is, a united Fine Arts Building at the City of New York, it is a project that can scarcely be considered without calling up the question of New York's greatest material lack (as a dignified and civic organization as distinguished from a mere social or business aggregation)—one or more great civic centres, at which, alike to the beauty and the convenience of the city, shall be effectively grouped those public or quasi-public structures that are, as it were, the vital organs upon which its vigor and character must so largely depend.

In most American cities we are now past the time when as a matter of course public interests were sacrificed and public buildings scattered, in order equally to divide the benefit of their presence betwen local rings of real estate interests. And except for two questions—the one of expense, and the other the lack of a well developed plan—both of which are in most cases but temporary, we should see the principle above illustrated so rapidly and fully put into practice among us as soon to make our cities models for the world in the very respects in which heretofore they have been most defective. Indeed, as has alrady been noted, in the case of Boston, Albany, Washington, San Francisco, Chicago and Cleveland, the movement is already begun or planned. In many another American city, the dry bones are already stirring toward that end.

In New York, especially during the last ten years, the growth of civic pride has been marked. Within the past five years the consciousness that here is the world's capital, the appreciation of what this means, the readiness and ability to take and support enlightened means toward realizing our destiny, have so rapidly grown that one must now assume this city definitely accepting leadership, and able and ready to take all needed steps toward that end.

From a material standpoint, the first is a well-considered plan for city development; and of this civic centres for the grouping of main public or semi-public buildings will be an essential. At one—probably that toward which shall focus our hotel, amusement, and transport activities—a prominent feature will be a noble home for the fine arts, combining more attractions for the public and art workers than are elsewhere gathered at any one place.

XUM

THE STRUCTURE OF CITIES.

By Richard M. Hurd.

In studying the structure of cities, the starting point is the concept that a city is a living organism, whose life exhibits not a series of accidents but a definite conformity to laws, undergoing constant modifications in response to changing influences.

While ancient cities in large part originated for mutual protection, the modern forces creating cities may be classified as commercial, industrial, political and social. Commerce is the most important factor. An exchange of commodities necessarily locates population at points of transshipment, and when such exchange is accompanied by a break in bulk or by a change of ownership, the complex mechanism of commerce, performed by importers, wholesalers, retailers, insurers, brokers and bankers, is then added. Cities are the stopping points on the lines of the great trade routes which have in all ages controlled the flow and deposit of wealth.

The industrial factor, though often of slight influence at first, is of constantly increasing importance, both because of the development of the factory system by the application of steam and the invention of machinery, and the tendency toward concentration of various industries in favored localities.

The political factor, while assisting to maintain many of the smaller cities, such as capitals of German states, county seats in England, department cities in France and state capitals in the United States, has its greatest influence in national capitals, such as Berlin, London, Paris and Washington.

The social factor includes culture, education, art, fashion, amusement and social opportunities to its tributary territory, for in each instance the city is the centre. It is the last to arise in the life of a

city, and ordinarily operates in direct ratio to the size of the city. The opportunities for a higher standard of life constitute a steady attracting force through the various grades of cities up to the highest. And in some instances, the social factor obliterates all others, as in the

BOSTON—OLD SECTION WITH IRREGULAR STREETS; NEW SECTION PLATTED RECTANGULARLY.

summer and winter resorts—Atlantic City, Newport, St. Augustine—where wealth is not produced, but a city is required to minister to those disbursing it.

All cities that have attained any considerable size are the resultants of all these forces, this diversification contributing to their stability. The underlying factors of paramount importance are the energy and brains of the people, these being in the last analysis the sole sources

of wealth; raw materials, cheap transportation, favorable climatic and other conditions are merely opportunities requiring energy and brains to convert them into wealth.

Location of Cities.

The location of cities is also determined by these factors. The breaks in transportation locate commercial centres, these occurring most often where water and rail meet, as at harbors which are shipping points for productive regions, at the head of rivers, at an obstruction in a river requiring unloading, at the junction of two rivers, or at the meeting of a river and a canal. Although a river forms a natural highway, it also forms a barrier to intercourse between its two sides, and facilities for crossing it may so concentrate travel as to create a town at a ford, a ferry or a bridge. Inland commercial cities not located on lakes or rivers arise in the same way at the intersection of turnpikes or railroads.

The primary or purely extractive industries are commonly located near raw materials, but where raw material is a less important element in the product, the factors of trained labor, nearness to markets, technical and art knowledge operate constantly to draw the manufactories to the large centres of population, so that while the first forms of manufacturing produces villages, the later forms operate chiefly to increase the size of cities started by commerce.

BALTIMORE—PLATS PARALLEL TO IRREGULAR WATER-FRONT.

The political factor operates arbitrarily in locating cities, the usual result being a compromise location near the geographical centre, as, for example, Washington, Indianapolis, Columbus, O., and many

other state capitals. Social factors seldom determine alone the location of cities.

Inasmuch as the location of a city often determines to a considerable extent its internal structure, we must differentiate those on navigable waters from those not on navigable waters, and those growing up at the intersection of country roads, from those created by railroads. In the case of cities on navigable waters, the exact point of origin is commonly determined by the juxtaposition of deep water and a high bank, which obviates the expense of lightering cargoes or

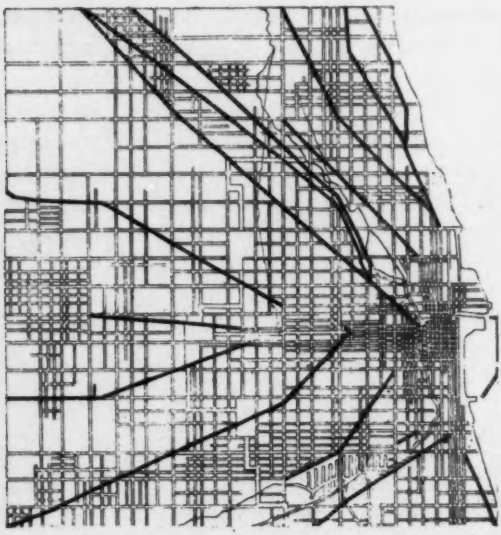
NEW ORLEANS—PLATTING PARALLEL TO CONVEX WATER-FRONT.

constructing long wharves. Inland, topography operates to determine the course of the turnpikes, at whose intersection settlements start, and also the course of railroads, the point at which the railroad station is established being either where a country road intersects the line of the railroad, or one convenient to the surrounding productive territory. Topography also locates some cities by supplying water power, as at Minneapolis and Spokane. Where the first settlers lay

out a plat in advance, the exact starting point of the city may be determined arbitrarily.

Influence of Topography on Structure.

Topography is the most powerful influence controlling the shape of cities, the topographical faults which interfere with the free growth of cities in all directions from the centre being of two kinds—water surfaces, consisting of harbors, lakes, rivers, creeks, and swamps, and variations from the normal level of the city's site, such as steep hills, sharp ravines and deep hollows. There are but few cities in which topography has not had and does not still have a powerful effect on the direction of city growth, the only conceivable location in which topography would be without influence being a level plain in which the city's site was not intersected by a river or creek.



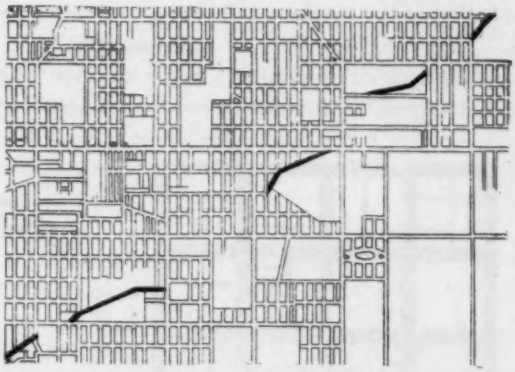
CHICAGO—SHOWING SURVIVING TURNPIKES.

Human labor continually diminishes the influence of topography—ponds, swamps, creeks and low lands being filled in, high hills cut down, and water fronts extended, but this only takes place when the land created is worth more than the cost of cutting and filling. There are, of course, limits to man's power of overcoming topography, since cities cannot grow out into deep water, nor can very steep or high hills be utilized.

Need for Systematic Plan.

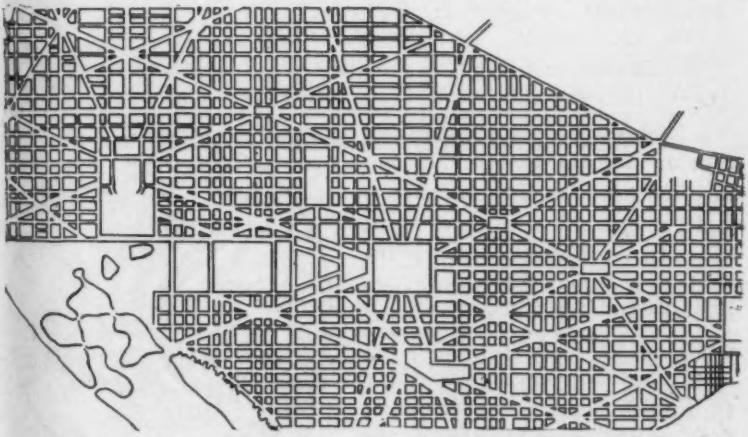
Before the nineteenth century, few cities were laid out in advance; the arrangement of streets and blocks was the result of the haphazard needs of individual owners. The old roads leading into the country were the bases from which other narrow and crooked streets of vary-

ing and irregular size were projected. The directions of these old foot paths, cow paths or Indian trails which have evolved into streets, were originally influenced by trifling obstacles—a hillock, a puddle, a large rock or a clump of trees being sufficient to turn the path from a straight direction. Present generations still walk around these obstacles, though vanished.



KANSAS CITY—OLD WESTPORT-INDEPENDENCE ROAD PLATTED OUT WITHIN PAST FIVE YEARS.

The result of such irregular laying out of a city is to heavily handicap its economic efficiency through the time wasted by its inhabitants in their daily business intercourse. Where cities have become great, the han-



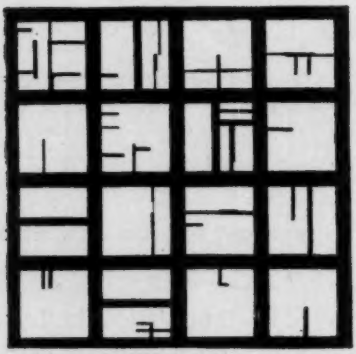
WASHINGTON—RECTANGULAR PLAT WITH DIAGONAL STREETS.

dicap presses so heavily that enormous sums have been spent to open up straight and wide new streets, as in Paris where $14,000,000 was spent in improving the Rue de Rivoli, and in London where the recent

Strand improvement is to cost $33,000,000. The almost uniform change, even in the older European cities, from the uncertain laying out of streets to rectangular plats of new additions evidences the realization of the inhabitants of the disadvantages of the irregular method.

Street Plans.

Where cities are laid out in advance with rectangular plats, the water-front is commonly used as a base, whether this is straight, curved, or broken and irregular. These plats extend back from the water-front to a distance measured by the expectations of the early inhabitants, but in newer American cities usually reach, in time, land held in accordance with the section lines of the government survey. This change in the direction of holdings will usually cause a change in the direction of the streets. Sharp differences in topographical levels also cause variations in rectangular plats. (Cf. Boston, Baltimore and New Orleans.)



SALT LAKE CITY—BLOCKS 660 x 660 FEET, WITH IRREGULAR INTERIOR ALLEYS.

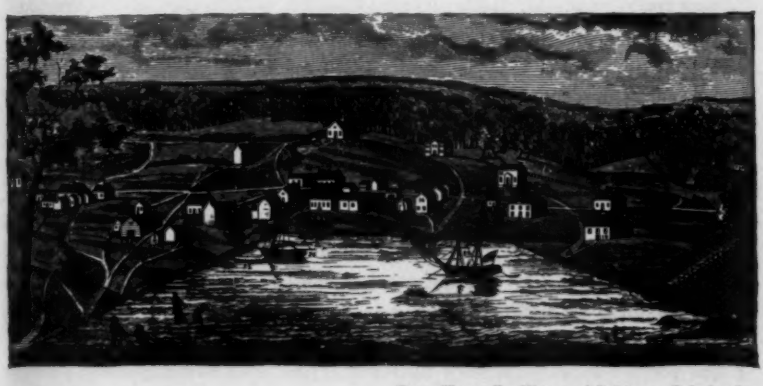
While many old turnpikes are obliterated by platting, some remain whose survival is chiefly due to the convenience which their diagonal course supplies to the city's traffic. Similar in effect, though differing in origin, are the diagonal streets laid out in advance in some cities, of which Washington, based on the made-over plan of Paris, furnishes an excellent example. The chief effect of rectangular platting by contrast with irregular growth, is to furnish superior opportunities for free movement throughout the city, which is further promoted where diagonal streets are superimposed. This large percentage of area in streets has a tendency to spread a city, to the disadvantage of

GENEVA, 1687—FIRST STREETS PARALLEL TO WATER-FRONT.

those desiring to do business within close limits. Such a platting is far more suitable for a national capital than a commercial centre. But some diagonal streets would greatly facilitate intercourse in every city.

Building Lots.

Building lots vary widely in different cities and at different periods in the same city. Increasing specialization of business demands wide variations. If it were possible to predict the size of a city, the problem of laying out the plat would be easier, the general principle being the larger the city the smaller the lots. The normal size in American cities runs from the minimum of 25 by 100 feet in New York up to an average of 50 by 120 feet, and finally to 166 by 330 feet in Salt Lake City, the latter being designed for a spreading country village.



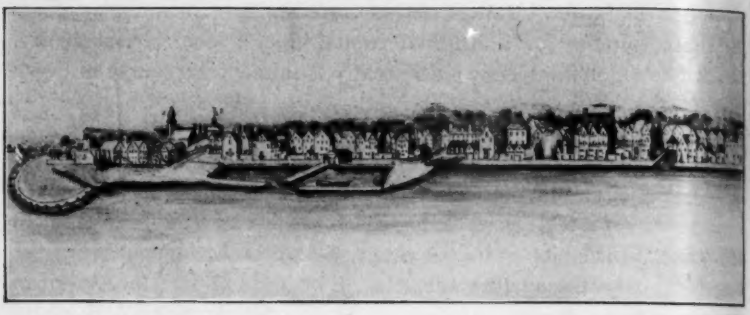
From Howard's *History of Baltimore*, Pub. in 1873.

BALTIMORE, 1752—FIRST HOUSES CLUSTERING AROUND FIRST DOCK.

From the lot unit the block is built up. Its width is double the depth of the normal lot, with or without an alley added, and its length varies according to the ideas of the platters. Since the growth of cities leads normally to the ultimate conversion of residence land into business land, a uniform system of platting suitable for business purposes has advantages. In cities which have grown up, haphazard, as the European capitals, the lots show no regularity either in width, depth or shape.

Block and Street Areas.

The relation of block area to street area varies from Vienna and New York, with 35 per cent in streets and alleys (this being a fair

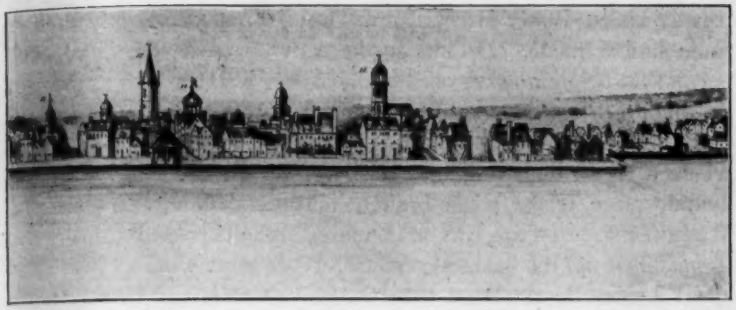


NEW YORK, 1746—FIRST LINE OF

proportion for many of the older cities), up to such new cities as Minneapolis, Toledo, Memphis and Omaha, where the percentage runs from 40 per cent to 50 per cent, and finally Washington with 55 per cent of the area of the city in streets, alleys and small squares. Obviously the more land given up to streets, the greater the dispersion of business and the greater the total area covered by the city. Operating to limit this tendency, one might expect an increase in the height of buildings on account of wider streets, but the height of buildings depends more upon the intensity of demand for certain locations than on the proportion between public and private land, and the highest buildings are largely erected on the narrower streets in the older business sections of cities.

While a city may have a normal proportion between land for communication and land for buildings, this does not necessarily mean that the city has economically been laid out. For example, Salt Lake city with 31 per cent of area in streets and alleys has such large blocks that about one-half of the area is practically wasted. The unsuccess-

DAWSON CITY, 1895—FIRST LINE



GROWTH ALONG EAST RIVER.

ful attempts to utilize the interior of these large blocks by the private laying out of small interior streets which do not connect through the different blocks, exhibits a reversion to the primitive method of individual against the modern municipal laying out of city area.

Structure of Water-Front Cities.

The general principles which determine the structure of cities, as villages develop into towns and towns into cities, are many. In the first place, the earliest buildings of a commercial city cluster around the point of origin in order easily to handle traffic coming from the outside world. Growth follows always the line of least resistance or of greatest attraction. In a water-front city, the first line of growth is normally along the shore, both because additional docks and buildings opposite them start an axis of travel parallel to the water-front, and also because the bank of a river or harbor furnishes a natural highway for the first settlers. The Strand in London is typical as the first street of a water-front city. Such a street in this country is

OF GROWTH ALONG WATER-FRONT.

usually called Water street, Front street, First street, Bay street or some similar name. Ordinarily the water-front is later filled in far beyond the original street on the edge of the water, as with the Strand in London, Pearl and Greenwich streets in New York, etc.

A frequent variation in this normal development has occurred where a creek, emptying into the river or harbor, made a sheltered landing place, whose traffic brought business buildings on either side. When the size of ships was so increased that the creek became useless, it was filled up, the business street however remaining, as with Broad street in New York, Dock street in Philadelphia, and Canal street in New Orleans. Another exception to the normal development appears where only one good approach to the water exists, the

BOSTON IN 1839—BACK BAY SINCE FILLED IN.

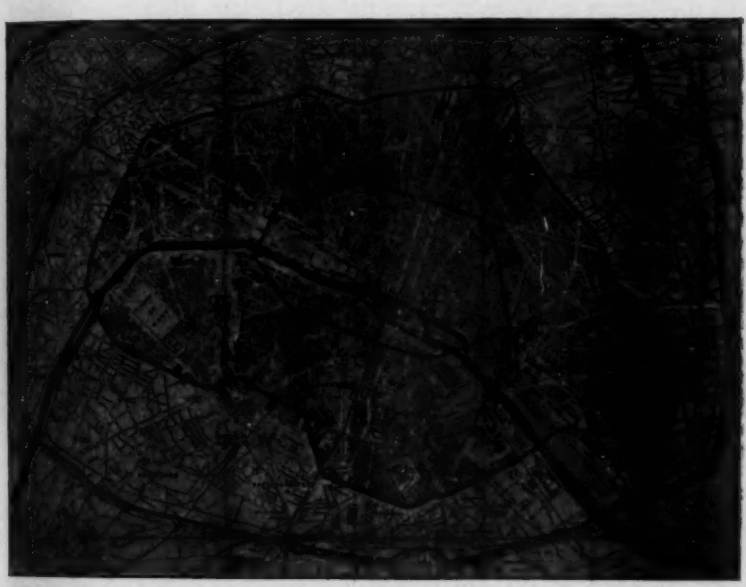
growth then extending up the one street running back from the water.

Inland Towns.

In the case of inland, cross-roads towns, the first buildings are erected at the intersection of the turnpikes, which are commonly called Main street, Broad street, High street, or some similar name, and extend along these roads. In the case of inland cities originating from a railroad, the railroad station takes the place of the wharf in a water-front city, the first buildings being erected opposite it and extending out the turnpike having the principal traffic with the other towns or farming districts. In stating these normal first steps in the life of cities, those started for land speculation, such as West Superior, Tacoma, Guthrie, etc., should be omitted, since capitalistic creation takes the place of a gradual evolution.

How Cities Grow.

From the very beginning, cities conform to biological laws. All growth is either central or axial. Distance is a disadvantage and hence stores and offices seek to be close together at the centre. This pressure of demand for central locations never ending in a growing city, causes a continual displacement of one form of business by another and a constant expansion of the city's boundaries, as a city empties itself outward into its suburbs.



PARIS—CENTRAL GROWTH EXHIBITED BY SUCCESSIVE ENCIRCLING BOULEVARDS, FORMERLY FORTIFICATIONS.

Axial growth, on the other hand, is the result of transportation facilities, either turnpikes, street railroads or steam railroads, which by rendering locations more accessible draw growth in their direction, and determine the framework of cities. If we assume a level plain to be the site of a city, the forces of axial and central growth, if undisturbed by other factors, would result in a star shaped city, extending first along the main thoroughfares radiating from the centre, and later filling in the parts lying between the thoroughfares. A con-

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tinual contest exists between axial growth, pushing out in long lines from the centre, and central growth, which follows and obliterates it, while new projections are being made further out upon the various axes. In some cities central growth occurs first, and in others axial growth; but all evidence both forms.

Axial Growth.

Of the axial forces, the turnpikes in the older cities are of chief importance. Before the days of railroads, these controlled so much of the outside travel as to cause the streets, into which they merged, to become the principal business streets; and many still maintain their supremacy. For example, Broadway in New York was part of the old Albany turnpike which runs on to Montreal. Washington street in Boston was the turnpike to New York, which in passing through Providence was known as Westminster street. Main street in Hartford was the New Haven turnpike which continued north of Hartford as the Albany and Windsor turnpikes. The through road from New York to the south, starting at Montgomery street, Jersey City, where the principal ferry from New York lands, and continuing out Newark avenue, runs through Newark as Broad street, and so on to Philadelphia. The National pike, built from Washington to the west one hundred years ago, runs through Wheeling, where it is called Market street, Columbus, Ohio, where it is called Broad street, Indianapolis, where it is called Washington street, Terre Haute where it is Main street, and so on. In Kansas City, Main street was the old Santa Fe trail, running nearly a thousand miles from the Missouri river to Santa Fe. Instances could easily be multiplied. A common method, both in European and American cities, is to give a street within one city the name of the city to which it runs, as with Oxford street, London, Rue d'Orleans, Rue de Calais and Boulevard de Strassburg, Paris, Rue de Bordeaux, Pau, etc.

When railroads appear, their general influence is similar to that of turnpikes. The differences in detail are that railroads promote settlements only at stations on their lines, while on turnpikes growth is continuous, and that the edges of railroads are suitable only for manufacturing or warehousing, while the frontage on trunpikes is suitable for residences or commercial buildings.

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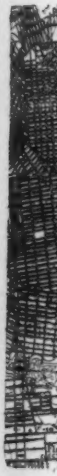

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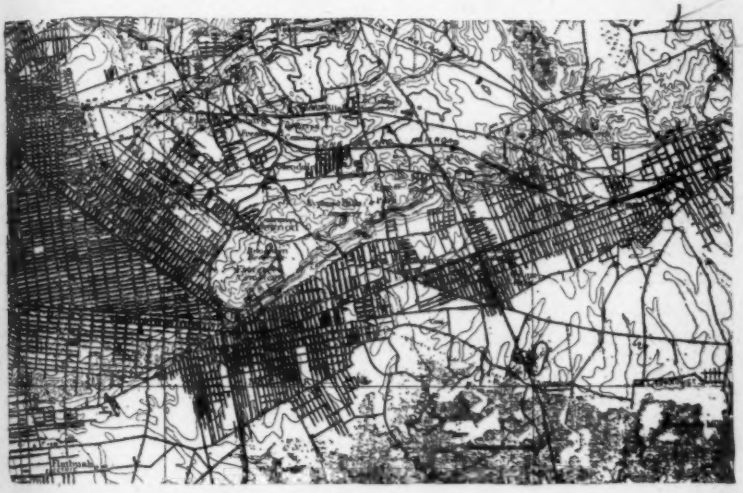
Central Growth.

Turning to central growth, the centres of attraction around which buildings cluster are the termini of transportation lines, such as wharves and railroad depots, factories which give employment to large numbers of operatives, buildings of public utility, such as the post office, city hall, city market, county court house or state capitol, buildings of semi-public utility, such as the stock, grain, leather, wool, and cotton exchanges, and the great hotels.

The termini of transportation lines attract buildings suited to the passengers' wants, such as hotels, restaurants, fruit and cigar stores,



BROOKLYN—GROWTH ALONG AXIS OF LONG ISLAND R. R.

etc.; termini handling freight, attract wholesale, warehouse and storage buildings.

The influence of public buildings on the structure of a commercial city is small, unless such a commercial city is also a national capital, as London and Paris. Where a city is wholly a political city, as is Washington, the public buildings largely determine the structure of the city. The smaller public buildings, found in all cities, such as post offices and city halls, have considerable influence in determining the line of early growth, but are of constantly diminishing importance as the other factors of a city's life become stronger, and it not infre-

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quently happens that the public building which largely created a street in time becomes a detriment to it. Exchanges crystalize from certain forms of business rather than cause buildings arbitrarily to cluster around them. They, however, are of the greatest importance in promoting central growth about themselves. The great hotels similarly are located to convenience their patrons, but in turn have great attracting power to retail shops and theatres, also lesser hotels.

Evolutionary Processes.

Of the principal steps in the evolution of a city, the first is the separation between business and residence. The buildings formerly used for shops on the ground floor and dwellings above come to be devoted entirely to business, while residences are located apart from the business centre. This separation is the natural result of increased demand for business space driving out the residence occupancy, while the greater wealth of merchants permits them to maintain separate residences in more attractive locations.

The next step is the development of retail shops to supply the wants of the inhabitants. These stores seek locations where people would pass even though no stores were there, and the best locations are those where pass the largest number of the wealthiest people by the slowest method of transportation, foot-travel having the highest value, next to this, in diminishing order, being carriage travel, street car travel, elevated railroad travel, and finally, of no influence except at stations, underground travel. Increase of travel is certain ultimately to convert almost any street into a shopping street. The chief exception is where people pass daily on their way from business to trains or boats, at so rapid a pace as to have no time for shopping, so that even though wealthy and in large numbers, they may be without influence on the street which they traverse, as with lower Rector street, New York.

While retail stores desire throngs of passersby and the greatest publicity, residences seek retired and quiet neighborhoods away from the noise and dirt of the business section. The ideal location for a city residence is one facing a park. The northward movement of fashionable residences in New York exhibits this clearly in the jumps from Battery park to St. John's park, to Washington square, Stuyvesant square, Gramercy park, Union square, Madison square, Bryant park, and, finally, Central park.

A further distinction between business and residence property is that business locations are selected by the man from an economic standpoint, while residences are selected by the woman from a social standpoint. In securing a home in a good residence section, a man secures also safe, attractive and healthful conditions for his family, well bred children for his children to play with, and in small cities desirable social acquaintances. It is these social aspects which explain the pressure in all cities towards the best residential sections.

Stores vs. Residences.

The quiet and retirement desired explain the constant onward movement of residences as the older portions of the city are encroached upon by business. A business building in the midst of residences constitutes a nuisance, yet if shop-keepers bid more for property than residents, stores will crowd in even among the homes of millionaires, as in New York on Fifth avenue above Forty-second street. The best possible hindrance to the onward movement of business is the placing of a park across a street, as in the case of many small parks in London, and of Gramercy park, New York. Such a park both blocks the axial traffic on the street, injuring it for business purposes, and furnishes a quiet and retired residence neighborhood, so that such small squares often remain as residence sections for years after the tide of business has swept beyond them.

ATLANTA—STAR SHAPED CITY.

Another fundamental fact is that cities grow not only on their outer circumferences, but throughout every portion of their areas.

If the growth of a city consisted merely of the addition of buildings at its circumference, it would be inorganic; but building and rebuilding constantly take place throughout every growing city, exhibiting a true evolution consisting of a continuous redistribution of matter and motion.

Effect of Rapid Transit.

The development of rapid transit in cities in the past twenty-five years has powerfully affected their structure. Under old conditions,

BOSTON AND SUBURBS—CENTRAL GROWTH AROUND STATIONS ON AXES OF RAILROAD TRAVEL.

where transportation was either on foot or in carriages or omnibuses, the growth of all cities was much more central than axial. Electric street railroads have wrought a revolution, scattering population over

a wide area. The ordinary allowance of time for the journey between residence and business, which formerly limited residences to two or three miles from business, now permits a journey of ten or fifteen miles. The effect of a street railroad on a city is therefore to bring its circumference nearer to its centre. It thus adds value to the circumference in rendering it accessible for residences, and to the centre in concentrating travel and traffic within it. The value added at either end of the street railroad is removed from the intermediate zone, where real estate values have suffered severely since the introduction of street railroads. Partly modifying this feature is the axial effect of street railroads in strengthening the streets on which they run.

The fact that land is cheap at the circumference of a city tends constantly to draw residences away from the business centre, while the fact that it is cheaper to transact business in a small area holds and draws offices to the centre. Hence there are two uniform tendencies as a city grows, both of which are promoted by street railroad transportation—one toward greater concentration at the business centre, and the other toward greater dispersion of the residence sections. The modern inventions of skeleton steel buildings and express elevators, permitting an intensive use of land hitherto unthought of, greatly favor concentration.

The daily movement of a city's population, owing to its regularity and volume, powerfully influences a city's internal structure. Its most striking effect is where, owing to the relocation of the best residence sections, the main axis of travel within a city is changed. Such a change of axis from a direction parallel to the water-front to one at right angles, took place in St. Louis about five years ago; and in Toledo and Portland, Ore., it has not quite arrived. In some cities the axis will probably never change, as in Duluth and Seattle, where topography forbids, or in Savannah, where the platting of small parks interferes.

The steps in a city's evolution result not only from increased population and added industries, but from continual specialization in business and differentiation in social grades. The early business buildings expand into structures of widely differing types, and the first cottages evolve into dwellings varying from tenements to palaces. The social activities in educational, charitable and recreational lines, become organized and evidence themselves in schools, hospitals, theatres and

clubs, this increasing diversity of function resulting continually in greater diversity of structure.

City Zones.

Viewed chronologically, the first simple separation of sections is between business at the centre of a small town and residences at the circumference. The next division consists of a warehouse and manufacturing section along transportation lines, then a general banking and shopping district at the center, then an indeterminate zone utilized for institutions and boarding houses and apartment houses, then a section of good residences and, finally, cottages and kitchen gardens at the outer circumference. In the largest cities the subdivisions of sections is greatly increased, these consisting of various centres devoted to different classes of business, such as a banking centre, a women's shopping centre, cheap shopping centres, wholesale centres for different businesses more or less diffused, manufacturing specialized and scattered partly in small centres near certain trades and partly along lines of transportation, residence districts divided into classes and varying from the tenement house districts near the factories and docks, up through the various grades to the fashionable sections, while axes of traffic run out in all directions from the city and carry retail shops through residence districts, the general result being great complexity in detail, accompanying a fairly simple general succession of districts.

Order of Progression.

The outward pressure of one section, of one zone upon another, means the slow advance of the banking and office section into the older retail or wholesale districts, the continual following along of the lighter wholesale houses into the buildings vacated by the retail shops, the close pursuit of the best residence sections by the best retail shops, with normally a mixed zone of institutions and clubs acting as a buffer between them, and the steady march of residences into the outlying country, first utilized for gardens or cottages. Whatever the size or shape of a city, the order of dependence of one district upon another remains the same.

The method of progression is not always a superior utility displacing an inferior one, the case being sometimes reversed where a superior utility having moved away, a vacuum is left, into which an

inferior utility moves. The onward movement of cities necessarily leaves behind many decaying sections, which slowly decline in utility from year to year, until in some cases the buildings being unrentable are closed to avoid taxation. This occurred in the case of some of the buildings on the site where now the Bowling Green building stands on lower Broadway, within a few blocks of the most valuable land in New York.

Growth from the centre which normally would be in all directions, equally, is restrained chiefly by topographical resistance, either water surfaces or high hills, and by railroads, whose encircling arms in the majority of cities cut off large tracts of otherwise desirable land from high class utilization. As the growth from the centre continues, a city overrides almost all obstacles, cutting down hills, filling in low land, bridging rivers, tunneling through hills and under rivers, and, making new sections, creates value in the land absorbed. In the outward movement the best residences will select the districts having the best approach and those which are topographically most attractive, such as moderate elevations, and will leave to the cheaper houses the lower levels, the rough tracts and all districts which are rendered unattractive by such disadvantages as railroads, factories and cemeteries. Where the land is level, so that there is neither any topographical resistance or attraction in the outlying districts, the best residence section will often be a continuance of growth from the small district of good houses first established within a city. In general a tendency exists on the part of different sections which first evolve at the centre to project outward districts similar in character to themselves. Since the retail stores of the different classes follow the residences of those who patronize them, the location of the best residence section in drawing the best retail shops and later the best wholesalers, is of the greatest structural importance. In some cities the best residences are grouped in several different locations, so that their influence is scattered, but where they are united in a single district they form an irresistible magnet drawing the best part of the city after them.

MUNICIPAL GOVERNMENT IN AUSTRALASIA.

By T. George Ellery.

The concentration of population in cities, which is so characteristic of the present century, is nowhere more strikingly illustrated than in the statistics of the seven colonies of Australasia. In his work on *The Growth of Cities,* Dr. Weber compares the United States of 1790 with the Australia of 1891, showing that, with populations nearly equal, the proportion of city dwellers in towns of 10,000 or more was only 3.14 per cent. in the United States of the eighteenth century, while it was 33.20 per cent. in the Australia of an hundred years later. "The Australia of to-day," says Weber, "has the population of the America of 1790; it is peopled by men of the same race; it is liberal, progressive and practical; it is a virgin country with undeveloped resources; it is to an equal extent politically and socially independent of European influence. But Australia is of the nineteenth, rather than of the eighteenth century; and that is the vital fact which explains the striking difference in the distribution of population."

The Australian census of 1901 shows that this tendency to concentration still continues, and we may put it on record here that with the same social causes operating in Australia as in the older lands, the same effects follow. Furthermore, over a great portion of the continent of Australia the face of nature wears an almost perpetual frown; the country is without water (except artesian), rivers and lakes are salt, and the rainfall is fickle. Small wonder then that the dour life of the land settler and the wool grower has few charms for the younger generations (infected with the restless hurry of modern life) as compared with the allurements (often meretricious) of cities. A larger proportion of the total population lives in cities in Australia than in any other country of the world except Great Britain. The actual figures given by Weber in his *Growth of Cities* (p. 144–5) are as follows:

POPULATION IN CITIES OF 10,000 OR MORE.

Countries.	Percentage in 1850.	Percentage in 1890.
England and Wales.....	39.45	61.73
Scotland	32.2	49.9
Australia	none	41.4
Belgium	20.8	34.8
Prussia	10.63	30
United States.....	12.0	27.6
France	14.4	25.9
Austria	5.8	15.8
Russia	5.3	9.3

A peculiarity of Australia is the general predominance of the capital cities, which, with their suburbs, absorb a very large proportion of the total urban population. New Zealand is exceptional in this respect having three large cities of nearly equal importance. In this study we shall confine our attention principally to the ten cities whose relative importance can be judged from a comparison of their population in 1891 and 1901 with that of the seven colonies. The figures follow:

States and Capital Cities.	Population. 1891.	Population. 1901.	Increase 1891–1901.
New South Wales.....	1,260,123	1,362,232	102,109
Sydney	387,434	493,956	106,512
Victoria	1,140,405	1,195,874	55,469
Melbourne	490,896	488,968	—1,928
Queensland	393,718	502,892	109,174
Brisbane	93,657	119,907	26,250
South Australia.....	320,431	362,595	42,164
Adelaide	133,252	162,094	29,842
West Australia.....	40,872	182,533	141,751
Perth	8,447	36,199	27,752
Tasmania	146,667	171,066	24,399
Hobart	33,450	34,104	654
New Zealand.....	626,658	773,439	146,781
Wellington	34,190	49,292	15,102
Other Cities.			
Tasmania—			
Launceston	17,208	21,174	3,966
New Zealand—			
Auckland	51,287	67,273	15,986
Dunedin	45,869	52,398	6,529

It is noticeable that Melbourne shows an absolute *decrease* in population during the last decade. Several explanations have been offered for this fact; the most reasonable attributes the falling off to the after effects of land booming and speculation. Melbourne, including its suburbs, still has 40.9 per cent of the total population of

Victoria, while Sydney has 36.2 per cent of the population of New South Wales, and Adelaide 44.7 per cent of the population of South Australia. The predominance of these three capital cities is evident. Launceston has a peculiar importance for us, not on account of its size, but because it is far in advance of most Australian cities in the development of municipal functions.

Origin of Municipal Government.

The first municipal law of Australia was passed by South Australia in 1839, and was put into operation in 1840 in the infant city of Adelaide by the election of a mayor and common council. This law (according to Worsnop, the historian of the city and for thirty years its town clerk) was a partial transcript of the English statute of 1835, modified to meet the requirements of a handful of people, who only three years earlier had made the experiment of founding a new state in a wild and almost uninhabited continent.

Sydney, the capital of New South Wales, was first established in January, 1788, but no act of incorporation was passed until 1842. The city was divided into six wards and the first municipal election was held on November 1, 1842. The mode of election was peculiar, the law providing that upon the first day of November the citizens enrolled in every ward should openly assemble and elect four qualified persons to be councillors. On the ninth day of November, the council was to assemble at noon in the market building, in closed session, and elect out of their own body or "from persons qualified to be councillors" six fit and proper persons to be aldermen, and one of their number to be mayor—a form of government evidently patterned after that of the English borough.

Melbourne, the present capital of Victoria, came into being as a village on the River Yarra in 1835, and was incorporated in 1842 by the legislature of New South Wales, Melbourne being then an integral portion of the mother state of Australia. The act of incorporation was similar to that of Sydney.

Brisbane, the capital of Queensland, was founded in 1826 and incorporated in 1859. Perth, the capital city of West Australia, was founded in August, 1829, constituted a municipal corporation by statute in 1871, and dignified with the title of city in 1880. Hobart, the capital of Tasmania, was founded in February, 1804, and proclaimed a city by letters patent on July 20, 1843, on the arrival of

Bishop Nixon from England.* The city was incorporated in December, 1857.

The colonization of New Zealand was first attempted in 1825, and in September, 1839, a company of emigrants sailed from Gravesend, England, under the ægis of the New Zealand Company. In 1840, Wellington, the present capital of New Zealand, was founded. Dunedin City—the Gaelic name for Edinburgh—was founded by Scotch Presbyterians in 1848 under the auspices of members of the "Free Kirk," who did not at the outset welcome other creeds and nationalities. Its first start on the road to prosperity and stability was given it by the gold fields of Gabriel's Gully. Auckland, which is essentially a commercial city, was incorporated in 1872 with a population of 12,745. It was the seat of government until 1865, when Wellington became the capital of New Zealand.

State Administration of Local Functions.

In the Australian states, with their enormous areas and sparse population, until recently the state governments have been looked to for almost everything municipal involving expense, above the level of the curb, the water-table, and the road surface. This is accounted for by the newness of the country. An unoccupied land is taken possession of by the British Crown. Its earliest government whether crown or elective is its alpha and omega. Later, governmental authority is parcelled out for greater convenience among local areas with elective governing councils created under statute with powers, rights and privileges clearly defined; and the inhabitants within each area pay rates or taxes for the common good of the area of jurisdiction, for the making of roads and footways, for the removal of garbage, and for the abatement of nuisances common to gregarious man. But the Australian local areas are mostly small, and the people are few in numbers, therefore the reasonable taxing powers produce no more than is sufficient for the most elementary wants of the areas.

As time goes on, the exigencies of population require that water works shall be established. But Australia is an arid country in many parts, and water conservation is enormously expensive. Therefore the inhabitants of the local areas request the state government to spend

* The see of a bishop in England is always designated a city, and the custom was carried to Australia in the days of early settlement; now towns attain to the dignity of cities mostly by virtue of parliamentary enactments fixing a population basis.

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the money of the taxpayers of a whole state in providing a water supply for a local area or a given number of local areas. This policy succeeds because the metropolitan areas carry the bulk of the population and influence in the Australian states. Having entered into a policy of water conservation, the state government has become—as in South Australia—the conservator of water for the whole state, making the necessary charges and collecting the necessary water rates. Similarly sewage disposal, involving great cost, has frightened most of the local authorities, and the state governments, or quasi-state authorities created by the state, and designated "water and sewerage boards," have undertaken the rightful and proper work of the municipalities. We find the state governments also owning and operating abattoirs, applying the moneys of the state to purely local concerns—a policy which is bad both in principle and in practice,—owning and operating street railways, and owning cemeteries.

Another cause of the timidity displayed by the metropoliton centres in regard to big municipal enterprises, such as water, sewerage, transit, etc., is the dislike of direct taxation. The state parliaments mostly insist on all municipal debenture bonds being repaid in due time and the provision by the municipality of proper interest and sinking funds, whereas when the states face undertakings running into millions of pounds, an appeal is made to the London money market, and provision for repayment is rarely made. Interest is all that is provided for (colonial revenues being usually elastic enough to stand it somehow), and the millstone around the neck of the Australian citizen increases year by year. But its galling weight is not felt by the present day taxpayer; he is passing it on to posterity. To sum it up: the urban dweller has been wonderfully fortunate in distributing the cost of his necessities and his comforts among the taxpayers of the whole state. He has escaped direct municipal taxation by shunting local undertakings upon the state, where repayments of loans (while the British bondholder is complacent) are unknown and almost unthought of, and where a shortage in revenue is too often made up, not by honestly imposing additional taxation, but by the curious expedient of taking loan moneys into revenue account.*

The country towns and local districts copy the pernicious example of the metropolitan centres in asking for assistance in the building of

* *Sydney Bulletin*, April 27, 1901.

roads, bridges, etc., payment being made for them out of state funds instead of local revenues.

Home Rule Needed.

State governments in Australia are known colloquially as "milch cows," and the stock cry of certain sections of the community is "The Government must do this!" and "The Government must do that!"—anything in fact that will keep local rates at a low figure and shift the burdens from the shoulders of the municipalities. "Nationalize! Nationalize!" is the cry of the thoughtless. But many see the fallacy of this policy when applied to local concerns and undertakings, and reformers are now endeavoring to broaden the spheres of municipal life by giving the municipalities greater areas to look after, with extended powers and greater scope of action, for "the larger the sense of municipal responsibility which prevails, the more it reacts on the corporation or the municipality itself. And men outside the municipality, or who have hitherto held aloof from municipal government, when they see the higher aims of which the municipality is capable, when they see the wider work that lies before it, when they see the incomparable practical purposes to which the municipality may lend its great power, are not inclined any longer to hold aloof."*

The principal problem facing Australia is the determination of the exact position of the municipality and the relations of local government to the state governments. The municipal policy in the days of infancy and swaddling clothes was decentralization, but that period has gone by forever, and now "it is time that the municipal chemist cast the refractory ore into his crucible and ascertain its various components."†

Functions Performed by the State.

As already pointed out, the cities of Australia are very prone to depend on the state governments for financial aid. This naturally leads to the assumption of many municipal functions by the state, a tendency that has been helped along by the unusual relative importance of the capital cities and the chaotic condition of local municipal organization. The municipal corporations proper, known as the "cities" of Sydney, Melbourne and Adelaide, contain only a fraction of the population of the metropolitan areas, and the performance of certain public functions has consequently necessitated the interference of state

* Lord Roseberry in the *Glasgow Herald*, January 24, 1898.
† Maltbie, *English Local Government*.

authorities or the creation of metropolitan boards. Throughout the seven colonies, the police are under the direct control of the state governments, though in South Australia the municipalities are required to contribute to the support of the police stationed within their respective limits. Public health functions are under the concurrent jurisdiction of the states and the municipalities. Education and charities, in so far as these functions are not performed by private agencies, are controlled by the state governments. Law courts, prisons, asylums and hospitals are also generally under state control. The states of Australia proper perform a larger proportion of municipal functions for the cities than do the governments of Tasmania and New Zealand. The ordinary scope of functions actually performed by the local corporations includes principally the construction and care of streets, the maintenance of parks and public baths, the removal of garbage and the control of markets.

In Sydney and Melbourne the water supply and the sewerage system are under the control of metropolitan boards. The Sydney board is composed of six members, two of whom are nominated by the state government, two elected by the city council, and two by the suburban councils. In Melbourne the board is composed of 39 members representing the 24 municipal councils in the metropolitan area. The Adelaide water works and sewers are under the control of the South Australian government. Brisbane's water supply is also under state control. The cities of Tasmania and New Zealand manage their own water works and sewerage systems. Scattered amongst the country districts of New South Wales there are nine small municipalities which have constructed water works valued at £71,405. Twenty-five suburban and country municipalities have constructed sewerage works valued at £711,913.*

Everywhere on the continent of Australia the fire brigades are controlled by boards on which the state, the municipalities and the fire insurance companies are represented, the expenses being usually shared in equal portions by these three interests. In Sydney, Melbourne and Adelaide the suburban municipalities as well as the cities proper are represented on the fire boards. In Hobart, Launceston, Wellington and Dunedin, the fire service is municipally controlled.

* Coghlan's *Local Government Statistics*, 1901.

COOPER UNION NEW YORK.

Municipal Activities.

The cities of Sydney, Melbourne and Adelaide maintain 115 miles, 100 miles, and 94 miles of streets, respectively. Melbourne owns a stone quarry from which most of the road material required in the city and all "screenings" for foot pavements are obtained, but in order to afford employment for the unemployed manual labor spalls have from time to time during the past few years been obtained by tender from outside sources and then broken by hand at a fixed price per cubic yard. The municipal ownership of the quarry has been a commercial success, it has prevented an undue price being demanded by outside contractors.

Australian cities are particularly well supplied with parks. In Sydney and its suburbs there are at least 54 which range from one-fourth of an acre to 36,360 acres in area. Of parks containing more than ten acres, there are 32. Melbourne is even better supplied with breathing places, there being 80 all told ranging in area from one to 464 acres, of which fifty have ten acres or more each. Adelaide's parks and reserves completely surround the city forming a belt from one-third to one-half mile wide, and the city in this respect is the best dowered in Australia. Some of these parks are maintained by the state authorites.

Sydney, Melbourne and Adelaide give public organ recitals. The first of these cities has a magnificent town hall with seating capacity of 4,000 in which is placed "the largest, finest-toned and most powerful organ ever built." The cost of this organ was £16,300, and until recently the municipal council permanently retained Mons. Wiegand, a noted Belgian organist, at a salary of £500. Theatres are not municipally controlled in the principal Australian cities.

Markets for vegetables, produce and cattle are controlled by the municipal council of Sydney. One of these, the Queen Victoria Market, is a magnificent pile of architecture, erected at a cost of over £750,000. The other Australian capital cities also maintain municipal markets, which are generally lucrative. In Perth, however, the markets are worked at a loss, and the last mayor's report sets out that the state government had agreed to take them over and relieve the council of all responsibility. Abattoirs are generally under municipal management, but those in Sydney are controlled by the state government, and in Perth there are only private slaughtering establishments.

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The ferries of Sydney are in the hands of private companies, while those of Brisbane are controlled by the city.

Lighting.

The gas and electric lighting services are controlled in Sydney by private companies, but the city council is now taking steps to establish an electric lighting plant. The lighting of the streets by gas now costs the corporation £14,260 a year under the contract with the gas company. There are in New South Wales seventeen country municipalities owning gas works valued at £159,848, and the suburb of Redfern and five other country districts have municipal electric lighting plants worth £54,500.* These may be taken to be the small beginnings of municipal enterprise in districts where the tentacles of the state government octopus have not been allowed to close over and choke the independence and business spirit of the townsfolk. In Melbourne, the gas works are in the hands of a company, as also the electric lighting plants of the suburbs. The city corporation owns and operates an electric plant. The gas works of Adelaide, Hobart, Auckland, Brisbane and Perth are all privately controlled, but municipal electric lighting enterprises are being planned in the last two cities. Dunedin City controls its own gas supply, while Launceston has a municipal electric lighting plant. The price of gas charged by the metropolitan company in Melbourne is five shillings per 1,000 cubic feet.

Government Street Railways.

In New South Wales the tramway system (partly cable, partly steam and partly electric) is controlled by the state government, and is immediately under the superintendence of three state railway commissioners.

In Melbourne, on the other hand, there is an extensive cable-car system, worked by the Melbourne Tramway and Omnibus Company under lease from the Melbourne Tramways Trust. The Trust is composed of 18 members, elected annually—7 from the Melbourne city council and one from each of the municipal councils of the eleven suburbs into which the Melbourne Tramway and Omnibus Company's statute authorizes the extension of the tramway lines. The Trust constructed all of the lines, amounting to 43½ miles of cable and 3¼ miles of horse traction, with money borrowed for the purpose upon

* Coghlan's *Local Government Statistics*, 1901.

the security of the revenues and properties of the municipalities, and the lines were leased for thirty-two years from July 1, 1884, to the Melbourne Tramway and Omnibus Company, who accepted the liability to keep the lines in repair and properly furnished, to pay license fees for all cars, drivers, and conductors, and municipal rates, and to pay to the Tramway Trust the interest payable upon the borrowed capital, with an addition of one and one-half per cent during the first ten years, two per cent during the second ten years, and three per cent during the third ten years of the lease, to be invested by the Tramway Trust as a sinking fund calculated to pay off the capital borrowed at the termination of the lease, when the lines (not the rolling stock) will revert to the municipal authorities in good working order and free of cost. The total capital borrowed is £1,650,000 at four and one-half per cent. The sinking fund on December 31, 1900, amounted to £523,000, nearly all invested in Victorian municipal debentures.*

Private Undertakings.

The tramways of Adelaide, Brisbane, and Perth are all owned and managed by private companies. There are 72 miles of track in the metropolitan area of Adelaide which is served by an extensive horse traction system, most of which has been in operation for over twenty years. It is obsolete now, and a triangular fight has been proceeding for some time past between nationalists (advocates of state control), municipalists (advocates of municipal ownership) and those who canonize private enterprise, for the possession of the tracks and the conversion of the present line into an up-to-date electric system. The powerful Westinghouse Co. has promoted a bill in the state legislature to buy out all existing companies, consolidate them and electrify the lines, making fairly liberal payments and concessions to the municipal authorities, and giving them a right of purchase in ten years. The fight has been proceeding for three years now and it has been unusually acrimonious.

Brisbane has the electric overhead trolley system. Approximately 25 miles of roadway representing about 40 miles of track have been put down in the city and suburbs. The tramways are the property of and are worked by the Brisbane Tramways Company Ltd. No payment is made to the municipality for the franchise. The company

* *Year Book of Australia.*

is liable for the maintenance of the roadway used by its cars. The track-way is taxable property for municipal purposes. Considerable difficulty was experienced at the outset in arriving at a satisfactory basis of valuation, but ultimately an agreement was reached whereby three-fourths of one per cent of the gross traffic earnings of the company should be allocated in lieu of taxes, the proportions due to each local governing body being calculated upon the route mileage. The relations between the company and the municipality are governed by Tramway Acts of 1882 and 1890, the above mentioned agreement relative to the rates, and a further agreement in regard to certain streets which the municipal council laid with wood blocks subsequent to the construction of the tram tracks, whereby the council relieves the company of the responsibility of maintenance in these streets, and the company as a *quid pro quo* undertakes to pay interest upon the capital outlay of the wood block work of £20,000. The acts provide that the municipality shall have the right to purchase the Tramways at the expiration of a period of years.

The overhead trolley system is used in Perth. The tramways are owned and worked by the Perth Electric Tramway Co. Ltd. The agreement with the municipal council provides for the construction of seventeen and one-quarter miles of track. The company agrees to pay to the council three per cent of the gross earnings after the expiration of three years from the granting of the provisional order. This payment is in lieu of all municipal taxes. The relations between the company and the municipality are governed by an act of the state parliament, and also by an agreement between the tramway company and the municipal council. The municipality has the right of purchase at the expiration of twenty-one years or twenty-eight years, the price to be settled by arbitration in manner provided by statute. In estimating the amount to be paid, all freehold and leasehold lands shall be valued at the actual price paid therefor by the tramway company, without interest and without any allowance for good will. If the right of purchase be not exercised at twenty-one or twenty-eight years, then at the expiration of thirty-five years the seventeen and one-quarter miles of track and *all extensions made within ten years,* the plant and works, shall be handed over to the municipal authority in good working condition without cost, except the actual price paid for freehold and leasehold lands acquired. All extensions of the system *made*

after the ten years above mentioned must be paid for prior to being handed over, the price to be fixed by arbitration.

Municipal Activities in Launceston.

The city of Launceston although very small in comparison with the larger city centres on the mainland is municipally in some respects more advanced in its operations than any of them.

It has charge of the sewerage, water, and electric light works, undertaking not only the public work associated with these, but work for private individuals as well. It installs premises with fittings for electric light, either for cash, on the hire purchase system, or at a rental. It has charge of the thoroughfares, and from its quarries and works supplies stone and metal, and also executes private cementing and asphalting work. It has a fine public hall capable of seating 3,000 persons, having a large stage, banquet room and all the usual accessories, the whole being heated by hot water pipes. It provides a museum and art gallery, swimming, plunge and Turkish baths (the latter heated on a system superior to any in Australia), and recreation grounds, and has power to subsidize local bands of music.

Its provident fund rules compel thrift on the part of its employees, and practically establish the old age pension system. From this fund it advances money on building society principles to members to enable them to become property owners, so that even the lowest in position can early in his years of service have his own house to live in, and in his old age be the recipient of a small pension.

It is represented on the fire brigade and hospital boards, and seven of its members form the local board of advice under the education act. It administers the public health and sale of food and drugs acts, and owns the only abattoirs in the city. In inspects all carcasses slaughtered without and sold within the city. Until lately it had its own police, but in 1899 the parliamentary policy centralized the police force of the state.*

Receipts and Expenditures.

The sources of municipal revenue in Australia are generally income from real estate owned by the municipality; fines, penalties and license fees; state subsidies; and rates levied on the annual value of private real estate. The total city revenue of Sydney in 1900 was £201,821

* Memorandum issued with the Mayor's Valedictory Address, 1900.

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of which £140,763 was derived from rates—taxes.* The city of Melbourne in the same year derived £81,832 from rates and £59,530 from market fees, dues and rents out of a total local revenue of £201,277. Of course in cities owning water works, gas works, electric lighting works, markets, etc., a large proportion of the total revenue is derived from these industries. In the older municipalities direct state subsidies do not play an important part, though the communities are relieved of many burdens by the direct performance of municipal functions by the state.

In New South Wales the government grants endowments to newly incorporated districts on the following plan: For the first five years a sum equal to the whole amount raised by rates. For the next five years, a sum equal to one-half the amount raised by rates. For the third (and last) five years, a sum equal to one-fourth of the sum raised by rates.

In Victoria, state subsidies, when voted, are distributed among the shires and boroughs so that the shires will receive two pounds for every one pound raised by rates, and the boroughs one pound for every pound raised by rates, provided the rates do not exceed a shilling to the pound, and provided that a borough shall not receive more than £2,000 subsidy in any one year. If the state appropriation is insufficient for distribution to all municipalities at this rate, the amount given to each is proportionately reduced.

Rates in Australia are generally levied on the net annual value of real estate, but in Queensland they are levied on the capital value of the land and no account is made of improvements. The usual custom

* The receipts and expenditures of the City of Sydney for the year 1900 were as follows:

Receipts.		Expenditures.	
Rates	£140,763	Sinking Funds, Interest, Commission and Exchange	£73,896
Rents and Hire	21,806	Gas Lighting	15,75
Dues	23,035	Fire and Plate Glass Insurances	57
License Fees and Fines	2,761	Water and Sewerage Rates	1,66
Sundries	13,456	Advertising, Printing and Stationery	1,53
		Material for Roads, Goals, Stores and Sundries	54,6
		Wages (day labor)	61,62
		Official Salaries	13,03
	£201,821		£222,53

except in Queensland is to ascertain the fair annual rental value of improved real estate, deduct ten or twenty per cent for "out-goings," *i. e.*, expenses for repairs, taxation, etc., and rate the property according to its net income. The valuation must not be less than five per cent in Victoria or four per cent in West Australia. Unimproved land is assessed in West Australia at not less than seven and one-half per cent of its capital value, and in New South Wales at not less than five per cent except in the city of Sydney where the limit is six per cent. Real estate devoted to governmental, charitable, educational or religious purposes is everywhere exempt from rates, though the detailed exemptions differ in different states.

Municipal Indebtedness.

Municipalities are usually authorized to borrow money to liquidate outstanding debentures or for the purpose of certain permanent improvements. In Victoria and West Australia the limit of indebtedness is fixed at ten times the amount of the municipality's annual income. In Victoria any twenty persons inscribed on the municipal roll may demand a referendum of any proposed loan, not for the purpose of liquidating outstanding indebtedness, to the rate-payers. The laws of Victoria also require that whenever a municipality borrows money, the council shall establish a sinking fund with an annual appropriation of not less than two per cent of the amount of the debt. The moneys in the sinking fund are to be invested in Victorian government stock. The laws of Victoria and West Australia set forth in detail what are to be considered permanent improvements for which municipal councils may borrow money. The Victorian Local Government Act enumerates the following "permanent works and undertakings": Streets and roads, bridges, culverts, ferries and jetties, sewers and drains, water works, gas works, municipal offices, pounds, abattoirs, markets, baths and wash-houses, pleasure grounds, libraries, museums and places of public resort and recreation, hospitals, asylums and other buildings or places for charitable purposes, trackways for pavements of iron, steel, wood or stone, land and materials. Whenever the undertakings for which debentures are to be issued require the compulsory taking of land, an order authorizing the execution of the work must first be confirmed by the minister controlling corporations.

In West Australia the government's consent is required before a

municipal council can borrow money for the construction or purchase of water works, gas works, electric lighting plants, or tramways. In New South Wales councils may borrow for general purposes by debentures, mortgage, or otherwise, with the sanction of the governor in writing under his hand, any sum not exceeding the total estimated revenues thereof for the ensuing five years. Under special acts of Parliament powers are conferred upon councils similarly to borrow funds for the erection and equipment of gas, water and sewerage works, and the purchase of sites for and the erection thereon of council chambers or other municipal offices or buildings.

The gross indebtedness, gross assessed valuation and gross annual revenue of the principal cities of Australia are as follows (data not ascertainable where blanks occur):

Sydney	£1,588,233	£1,930,343	£201,821
Melbourne	1,150,000	1,326,785	201,277
Adelaide	69,900	475,369	54,845
Brisbane	349,867	.....	.....
Perth	155,000	277,971	48,154
Hobart	231,000	181,646	38,157
Launceston	281,150	126,470	38,738
Wellington	734,924	.....	*85,000
Auckland	449,000	.....	*60,000
Dunedin	601,225	.....	89,735
All municipalities in New South Wales	3,059,295	.....	.....

Municipal Organization.

The organization of municipal government in Australia is patterned in general after the English system, though in some Australian cities the members of the council are not separated into two classes. The corporate authority rests in the council. For the election of its members most cities are divided into wards. But in both Hobart and Launceston there are no wards; the members of the council are elected at large, three being chosen every year for three-year terms. In Adelaide the council consists of six aldermen elected at large, and twelve councillors by wards. The mayor is usually chosen by the council, but in Adelaide and Perth he is elected by the voters.

The electorate in Australia is based on rate-paying qualifications for the most part. These vary in the different states, but everywhere, except in the city of Sydney, a system of plural voting prevails, and everywhere ratepayers must have paid their rates in order to be enti-

* Approximate.

tled to the right of suffrage. In Sydney there were according to the latest available statistics, 31,131 voters on the burgesses roll, of whom 5,337 were owners; 1,795, leaseholders; 16,664, occupiers; and 7,355, lodgers. Both tenant and owner are entitled to be enrolled in respect to the same property, though only one of them is required to pay rates. In New South Wales outside of the city of Sydney, those who pay rates on property assessed at an annual value of not more than £25 have one vote, those paying on more than £25 but not more than £75 have two votes; those paying on more than £75 but not more than £150 have three votes; those paying on more than £150 have four votes. In 1897, while plural voting still prevailed in the city, there were 16,125 voters entitled to one vote; 1,915 entitled to two; 1,435 entitled to three; and 2,750 entitled to four.*

In Melbourne the plural voting system obtains, though a minimum assessment of £10 is required as a qualification for voting, and there are only three classes. Ratepayers assessed on more than £150 have three votes; those assessed on from £100 to £150 have two votes; and those assessed on from £10 to £100 have one vote. Corporations that pay rates have the right to nominate three citizens to be inscribed on the roll of voters.

The system in Adelaide allows a citizen one vote in each ward where he has property assessed, when municipal officers are to be elected. When the vote is upon the approval of a municipal loan, the ratepayer has from one to six votes according to his assessment. In Brisbane, where the capital value of land is assessed, the owner or occupier has from one to three votes, according to valuation, but if the property is valued at less than £120, only the occupier has a vote. In Perth for ward elections there are two classes of voters, and for general municipal elections four. In Hobart and Launceston there is a minimum qualification of £8 annual value, and citizens assessed for more than that amount have all the way from one to seven votes.

In general, owners and occupiers of real estate assessed for taxation who have paid their rates are entitled to vote in Australian cities, whether they are men or women, residents or non-residents of the municipality. Aliens are generally debarred. This rule makes little difference, however, as 97 per cent of the people of Victoria, 96 per cent of those of New South Wales, and 94 per cent of those of South Australia are British subjects by birth.

* *Year Book of Australia*, 1897.

Nominations for municipal offices are everywhere made by petition. Usually only three persons, a proposer, a seconder and the candidate himself, are required to sign the nomination paper. In Melbourne, however, the signature of ten ratepayers besides the candidate are required, and a deposit of £10 must be made.

Officials in the administrative service of the city are appointed by the councils, as in England, the town clerk being the head of the official staff and holding office during good behavior.

Representative City Governments.

A description of the organization of three cities will give a clearer idea of how the system works.

The " City of Sydney " has a population of about 105,000 and an area of 4.5 square miles. The metropolitan area includes 41 suburbs, which, with the city, have a population of about half a million and an area of 145.5 square miles. The city is divided into twelve wards, each of which returns two aldermen to the council. Elections are by ballot, and the whole body of aldermen is renewed every two years. The mayor, elected annually by the aldermen from their own number, is the official head of the corporation, and is allowed £1,000 a year, not as a salary, but for expenses incurred in civic entertainments and in order to properly maintain the dignity of his office.

The principal municipal officers of Sydney are the town clerk, who is the executive head of the service, the city surveyor, the city treasurer, the city building surveyor, the city solicitor (who is allowed private practice), the superintendent of assets, the superintendent of street cleaning, the medical officer of health, the chief sanitary inspector and the general auditor. (The city accounts are also examined by state auditors.) Officers are appointed by the mayor and council and hold their offices during good behavior. The medical officer of health, who at the present time is also the city health officer, is appointed and paid by the state government. The duties of each can be inferred easily from the title of the office.*

* The rat destroying operations of the council merit a passing mention. Ever since the outbreak of bubonic plague last year the destruction of rats has been prosecuted by the government with considerable vigor. Early in February, 1901, owing to a narrow escape which the city had from the reintroduction of plague, through an infected troopship from South Africa, a slight scare occurred. A number of complaints as to the presence of rats in business places and private dwellings began to reach the town hall. To alleviate the scare the Mayor very wisely decided to sanction the appointment of a temporary rat-catching staff. They consisted of an experienced rat-catcher and two assistants, and their duties were to attend to the destruction of rats, more particularly on private premises.

The detail work of the city council is carried on by six committees, viz., (1) general purposes, (2) finance, (3) works, (4) health, (5) parliamentary and by-laws, and (6) electric lighting.

The "City of Melbourne" has a population of 67,000 and an area of 7.8 square miles. There are 22 suburban municipalities. The city is divided into seven wards, each of which returns three councillors, one being chosen annually for a period of three years. The councillors elect seven aldermen who hold office for four years, and the mayor whose term is one year. The mayor has an allowance of £1,500. The principal permanent municipal officers of Melbourne are the town clerk, the city surveyor, the city treasurer, the city electrical engineer, the building surveyor, the city solicitor, the medical officer of health, the council's paid auditor, and various inspectors of health, market, gas, factories, lodging houses, weights and measures, nuisances, etc.

The "City of Adelaide" has a population of 39,000 and an area of 5.8 square miles, of which 3.6 are devoted to parks and reserves. There are 18 suburban municipalities, which with the city proper have an area of 155 square miles and a population of 162,000. The city is divided into six wards. The city council consists of the mayor, elected annually by the ratepayers, six aldermen elected for three years by the city at large, and twelve councillors elected by the ward voters for two year terms. The mayor, two aldermen and one councillor from each ward retire every year and are eligible to re-election if desired. The two city auditors, qualified accountants, are elected by the ratepayers for two years, one retiring annually.

The mayor is styled "The Right Worshipful" and is *ex officio* a magistrate for the state. He is also *ex officio* a member of the board of management of the Adelaide hospital, of the botanic gardens board, of the zoological gardens board, of the liquor licensing bench for the metropolitan district, of the board of commissioners for the National park, and president of the association of local governing bodies in the state (both town and country).

The principal municipal officers are the town clerk, who is a justice of the peace, and the permanent head of the staff; the city engineer,

The head rat-catcher was detailed to visit every house from which complaints of the presence of rats were received. He inspected the premises and reported on them with respect to their infestation by rats or otherwise, and if rats were found to be present, selected positions for traps, setting them and leaving them in charge of his assistants. The freedom of the city from the plague in 1901 has largely been due to the extensive and regular destruction of rats.

the city surveyor, the city treasurer, the city valuator, the city cashier, the building surveyor, the city solicitor, the city analyst, the city inspector of traffic, vehicles, etc.; the medical officer of health, and various inspectors of health, nuisances, markets, lodging houses, abattoirs, etc., and foremen of works. The tenure of office is during good behavior.

Municipal Expansion.

The programme for the future may be summed up under two heads: Enlargement of areas, and increase of powers. Already the problems of a Greater Sydney, Greater Melbourne and Greater Adelaide are agitating the minds of the vanguard in municipal circles in these cities. In each case the city centre has its authority "cribb'd, cabin'd and confined" in its control of public health, transit, lighting and the like, by having to limit its energies to its municipal bounds. Each city is the heart or nerve centre of its metropolitan area. The citizen ratepayers are the business folk whose residences are in the suburban areas, and they see no reason for delaying the amalgamation of the city centres with the suburban local authorities.

The principal objectors at present are the suburban mayors and suburban town clerks, the one jealous of diminution of status, the other fearful of loss of position or reduction of salary. To the clamor raised by these principal objectors, there is added the vigorous chorus of the parochial councillors whose light is sufficient for a small suburban area, but whose mental effulgence would never be allowed to display itself in an enlarged city council such as a Greater Melbourne, Greater Sydney, or Greater Adelaide must necessarily have.

The bulk of opinion in these cities is at present in favor of amalgamation. The only alternative is to allow the various councils in the metropolitan areas to retain their individuality in minor matters and elect a county council for the whole area to which would be entrusted the oversight of public health matters, lighting, transit, etc. This alternative would certainly be a step forward, and a step forward along the line of least resistance, but the drawbacks to its adoption lie in the fact that a county council means the creation of a new body, and additional taxation for funds to enable it to carry on its work.

A Conference was held in Sydney in 1900 at which the resolutions involving the following programme were arrived at by the municipal delegates appointed to formulate a scheme for the better local government of the metropolitan area (I quote only the more important):

(1) A change in the form of the municipal government of the metropolitan area with the least possible delay.

(2) The area included at present in the City of Sydney and the forty-one suburban municipalities to be consolidated under the title of "The City of Sydney," and be governed by one central council.

(3) If Parliament decides to preserve the existing municipal bodies, the powers entrusted to them should be restricted to matters of purely local administration, and such other duties as may from time to time be delegated to them by the central council. In this event, all assessments should be made and rates levied by the central council, which would remit to the local bodies such amounts as would be necessary for local purposes.

(4) The area to be divided, on a population basis, into twenty-five divisions, each division to return three representatives to the council.

(5) The council to be elected for three years, all the members to retire every three years from the date of the first election.

(6) The existing franchise to be extended to all persons of full age who, for a period of six months prior to the compilation of the municipal roll, shall have been in occupation, joint or several, of any house, warehouse, shop or other building, within the area, but no voter to have more than one vote in any one division.

(7) The mayor to be elected by the citizens, and to hold office for one year, his election to be on the same franchise as that of the councillors.

(8) The rates to be estimated upon the basis of ground values, instead of the present system of rental values.

(9) One general rate to be levied for all requirements, which rate should not be limited in amount (a few exceptions).

(10) The Railway Commissioners, the Australian Gaslight Company, the Hydraulic Power Company, the Telephone Department, the Electric Lighting Companies, and all other public or private bodies using or interfering with any of the public ways to be made liable to payment of rates in respect of such user.

(11) The council to have power of lease and sale of properties in respect of which rates may be in arrear.

(12) The accounts of the council to be subject to Government audit; and any deficiency then certified to to be covered by a special deficiency rate in the next financial year.

(13) The council to have wide powers concerning all local matters.

(14) The assets and liabilities of the whole of the municipalities within the area, the powers of which are to be assumed by the council, and the estimated deficiency of yearly revenue from transferred services, to be determined by an independent commission, and thereupon to be taken over by the council; and, for a period of ten years from the establishment of the council, the Government to grant it an annual subsidy equal to such estimated deficiency.

Create a Civic Patriotism.

The case for the reorganization of the Melbourne metropolitan area rests upon a variety of grounds, which may be roughly divided into two divisions—the idealistic and the practical.* Ideally considered, the municipal organization of Melbourne is almost amazing in

* From *Greater Melbourne*, by Leonard V. Biggs, 1900.

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its complexity and chaos. Experience gained in the great cities of both hemispheres has shown that a municipal system which consists, as does that of Melbourne, of a variety of separate municipalities, nominee boards, and indirectly elected commissions and trusts is inimical to the existence of true civic patriotism. For civic patriotism to obtain a full and healthy life, a city must have some unity round which it can congregate all the virtues and excellences that stimulate affection. A city province like Melbourne, the whole area of which is practically split up into " cities of the rich, and parishes of the poor," cannot be regarded, ideally, as one. Without a central governing authority which shall be in close touch with the people, and which shall derive its authority and stimulus from a regular, united and periodical appeal to the people, Melbourne must be said to be voiceless. There is no directly elected body within the metropolitan area which can take in hand on its own initiative, the clearance of slums, the erection of model lodging houses, the carrying out of a comprehensive scheme for the better utilization of parks, or any other civic, humanitarian work on a large scale. Without some authority which can voice its municipal aspirations and put into concrete form its desires in the direction of the beautifying, improving, and ennobling of the entire metropolis, Melbourne must continue to remain a conglomeration of wealthy and comfortable districts, surrounded by poor, jealous and struggling relations—a collection of warring atoms, not a united, patriotic capital. Greatness under such conditions is impossible. To be great in the sense of inspiring admiration and noble emulation, a city must be a compact unit; to develop itself on the lines laid down by its famous rivals in the race for fame, in Europe and America, it must be able to undertake great works of improvement as a united city.

Would Remove Irresponsibility.

The practical grounds upon which the case for reorganization rests have been brought under public notice within the past two years in a multiplicity of forms. For instance, so loosely has the legislature defined the limits and the powers of some of the bodies concerned with Melbourne local government, that it is to-day a mooted point whether the water authority for the city is required to supply water for fire extinction purposes. The Metropolitan Fire Brigades Board is fighting the Metropolitan Board of Works over the connections between the city and suburban water mains for fire extinction purposes.

The South Melbourne council is bitterly opposing the endeavor of the mayor of Melbourne to beautify and dignify one of the approaches to the city proper. There is hopeless division of opinion among the municipalities with regard to tramway matters. These practical considerations, which are, after all, only samples of what might be advanced, show that positive anarchy prevails in municipal matters throughout the metropolis.

Under a common council for Greater Melbourne the following bodies would cease to exist:*

Name.	Number of Members.	How Elected.
1. Metropolitan Board of Works.....	39	Nominated by councils.
2. Harbor Trust.....	18	Class and Government nominees.
3. Melbourne Tramways Trust.....	18	Nominated by councils.
4. Melbourne Fire Brigade Board....	9	Nominated by councils and financial interests.
5. Melbourne Cemetery Trusts (seven)	50	Nominated by governor-in-council.
6. Parks and Gardens Committee.....	13	Nominated by city council and minister of lands and works.

Under a Greater Melbourne county council, the work of all these administrative machines would be performed by committees of the central authority. Great saving would, therefore, result from this reform alone.

Would Improve Official Personnel.

Melbourne is still afflicted with the idea that municipal affairs are so sordid, petty, uninteresting and trivial, that they do not deserve the serious attention of the members of the professions and leaders in the world of commerce, finance and industry. The consequence is that the percentage of voters who go to the poll is very small and the attention given to municipal contests equally small, whilst the standing, calibre and qualifications of the candidates are almost humorous in

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*Some idea of the relative importance of the various local bodies may be gathered from a statement of the revenue and debt of Greater Melbourne.

Authorities.	Approximate Revenue.	Loans.
Melbourne and 23 Municipalities.....	£500,500	£3,066,166
Board of Works.....	300,000	7,359,157
Harbour Trust	126,000	2,000,000
Tramway Trust.....	.....	1,650,000
Fire Brigade.....	35,000	130,000
Cemetery Trusts.....	5,000	.....
Parks and Gardens Committee.....	4,500	.....
Total	£1,020,500	£14,205,323

their relation to the issues involved. It is unlikely that public apathy will be removed unless Melbourne is municipally reorganized on such a basis that the attractions held out to men of striking personality and undeniable ability are such as to induce them to come forward and seek the suffrages of the citizens. With Melbourne unified, these attractions would be created. When men see that the conferring of home rule upon Melbourne gives them an opportunity of controlling the annual expenditure of over a million of money, when they learn that their county council is to be responsible for debts totalling twenty million pounds, and when they grasp the fact that their city will in future rank with London, Glasgow, New York and Birmingham as one of the pattern cities of the world, they may think it worth their while to take a deep, intelligent and even passionate interest in the government of the metropolis.

The advantages of unification from the point of view of economy are enormous. Many town-clerkships and other offices would be done away with; town halls would be made available for technical institutions, museums, art galleries and in some cases for swimming baths; the power of small property owners would be broken, and much petty intrigues would be avoided.

The public expression of the desire for municipal reorganization in Melbourne can be traced back to nearly fourteen years ago. It was about the year 1885 that the evils of the present chaotic state of municipal Melbourne began to attract attention. About the same time the community was faced with the problem of providing some metropolitan body which would control sewage and water supply. The suggestion arose that a sort of Melbourne county council should be formed, which would not only manage the sewage and water supply but regulate all Melbourne's municipal work. Parliament, however, ever jealous of its prestige, refused to favorably entertain the idea, and finally the present indirectly elected metropolitan board of works was brought into being. The county council idea, however, having once been launched, has been more or less strenuously advocated since the year 1888, the brunt of the work of educating the metropolitan electorates being borne by the great Liberal newspaper, the *Age*. Since then numerous conferences have been held, all of which have proved abortive owing to the opposition of the city council, which refuses to regard the citizens of Greater Melbourne as one great brotherhood, and persists in the notion that it has a moral as well as a

legal right to enjoy the entire profits from its markets. However, the movement has spread its branches beyond the council chambers of the town halls. Ratepayers' leagues, Christian citizen societies, the Christian social union, committees of Australian natives association and other bodies have all taken a hand.

Similar movements have been started in other cities and are very similar to those just described in Sydney and Melbourne.

Every thoughtful municipal student is forced to the conclusion, arrived at by O'Meara in his survey of municipal finance, that people who cavil at the growing expenditure of local governing bodies forget that it is the nature of well-governed areas to improve, and that improvement in a government, like the improvement of an estate, is of necessity a costly process in its initiation. It is possible to govern cheaply by the simple expedient of governing badly; but efficient government implies an efficiency of machinery, which must be paid for. To anticipate any immediate reduction in the cost of local government in Australasia is fallacious if local autonomy is to be in any way progressive. The reduction of direct taxation will come only when revenue-earning undertakings are freed from interest and sinking funds. Meanwhile, as the states increase in population and activity they can no more safely forego increased expenditures upon their local governments than a railway can increase its traffic capacity without a rise in working expenses.

STREET RAILWAY FRANCHISES IN NEW YORK.

[NOTE.—The following material has been put at the disposal of the Reform Club Committee on City Affairs from a source which is considered so trustworthy as to justify its publication. Examination of sundry of its figures not merely confirms this but indicates that the authority has erred so frequently in too liberal concessions to the holders of the franchises considered that the author's name is omitted in the hope that he may yet take occasion to complete the investigation into all franchises of which this is the first result. The preparation of this report has occupied such a long period of time that the data given are as of 1900 and 1901. It proved impracticable, without seriously delaying publication and greatly increasing the burden already voluntarily undertaken, to include the most recent operations of the Metropolitan Company.]

The surface street railways in the Boroughs of Manhattan and the Bronx have finally been conjoined and unified into a single operating system, affording to the public vastly increased facilities but failing to return to the city any adequate compensation for the valuable franchises enjoyed. The present investigation is an inquiry as of 1900 and 1901 (it was begun some time ago), into the cost of the physical properties, including both the trackage physically associated with the streets, and the equipment necessary for operating the trackage construction, the capitalization in stock and bonds based upon these physical properties; the value of the franchise rights and the good will connected therewith on the one side, and of the earning power on the other side; the gross and net earnings; the legislation under which rights have been secured.

Without the right to examine books or to send for persons and papers, it has not been practicable to obtain full information on all these subjects. But the services of experts, qualified to deal with the questions involved and to collate the several lines of evidence, have been obtained, and by this means sufficient facts have been secured to inform the public as to the general status of surface street railways in Manhattan and the Bronx and to show the need of more adequate investigation by the municipal administration or by the legislature.

Trackage.

The Metropolitan system, aside from the Third Avenue lines, has 98.82 miles of horse-car track, and 113.72 miles of electric slotted-

conduit track (including cable track in process of change), a total of 212.54 miles. The Third Avenue system has 15.85 miles of horse-car track and 54.32 miles of electric slotted-conduit track, together 70.17 miles below the Harlem river, and 135.34 miles of overhead trolley north of the Harlem river, a total of 205.51 miles. The combined Metropolitan-Third Avenue systems, now operated together, embrace 114.67 miles of horse-car track, 168.04 miles of electric slotted-conduit track, and 135.34 miles of overhead trolley, a grand total of 418.05 miles. The report of these roads to the New York Stock Exchange, Dec. 1, 1900, gives 23.75 more miles of trolley than the above figures (which are those of the *Commercial and Financial Chronicle*) or 159.09 miles, bringing the grand total to 441.80 miles.

The Metropolitan system proper includes a great number of lines owned, leased, or controlled through ownership of stock by the Metropolitan Street Railway Company, including the Sixth and Eighth Avenue, the Broadway, the Fourth Avenue, and other north and south lines, and many cross town and connecting lines, mostly within the Borough of Manhattan. The Third Avenue system, now consolidated under the Metropolitan management, through the ownership of a majority of the Third Avenue stock, includes three main divisions, namely: the Third Avenue lines proper, the Dry Dock & East Broadway, and the 42nd Street lines, south of the Harlem river in the Borough of Manhattan, and the Union or "Huckleberry" and connecting lines in the Borough of the Bronx.

In the Third Avenue system the *Chronicle* includes 10.67 miles of trackage rights on the trolley lines, making in all 216.18 miles, but these rights should evidently be excluded as trackage, as they must be included elsewhere. The last report of the State Board of Railroad Commissioners, before the 42d Street line was converted from horse to electric traction, gave 33.18 miles of horse-car track, 36.94 miles of conduit system and 128.17 miles of trolley road, a total of 198.29 miles. A report to the Stock Exchange, dated Dec. 1, 1900, but filed only March 28, 1901, signed by President Vreeland, gives the mileage of horse-car track as 20.48, electric conduit system 52.55, and trolley road 159.09, a total of 232.12 miles.

A remarkable discrepancy appears between all these statements and one signed by President Vreeland on Nov. 26, 1900, in a letter printed in the circular of the bankers by whom the $35,000,000 of new Third Avenue-Metropolitan bonds were offered for sale, as to which a courte-

ous letter to President Vreeland has failed to obtain an explanation. President Vreeland's letter states the mileage of the Union Railway as 99.24 (28.38 miles more than he reported to the Stock Exchange, Dec. 1, and 39.38 miles more than reported by the *Chronicle* in its *Street Railway Supplement* of Feb. 23, 1901), and the mileage of the Yonkers Railroad Company as 29.07 (4.75 miles more than he reported to the Stock Exchange five days later, and 12.5 miles more than reported by the *Chronicle* three months later).

The weight of rails in the extensive trolley system north of the Harlem river is reported to the state as from 54 to 90 pounds, or lighter than in many cities with no more miles of track. The Dry Dock, East Broadway and Battery and the Forty-second Street and Grand Street Ferry lines report rails of only 47 to 60 pounds, and the Central Cross-town line gives the weight of its rails as only 50 pounds per yard. Several others of the horse-car lines make no report on this subject, but most of them appear to be using the same class of light rails. On the other hand, the slotted-conduit lines are using the best modern grooved girder rails, of 100 to 115 pounds weight per yard.

Value of Horse-car Lines.

Most of the 114.67 miles of horse-car track, with rails mostly 47 to 67 pounds per yard, cost, when new, approximately $10,000 a mile. Charles E. Warren, secretary of the Metropolitan Company, in returns to the tax assessors in 1897, stated that the horse-car track averaged in value 50 cents a foot ($2,640 a mile) for straight track and $1 a foot ($5,280 a mile) for curves, the latter constituting less than 3 per cent of the total mileage. Milton J. Masson, secretary of the Central Crosstown and of the Christopher and Tenth Street lines, stated to the New York Assembly committee in 1895 that $6,000 a mile would be "an outside figure" for renewing their horse-car track, including taking up and putting down the pavements. New pavement, either granite or asphalt, costs from $3 to $3.25 a square yard, or $15,000 to $17,000 for each mile of track, including the paving between and two feet each side of the rails. Perhaps one-fifth of the existing horse-car track has been recently laid new, with 80 to 100 pound grooved girder rails. Such track, aside from paving, costs approximately $20,000 a mile. On the other hand, about $400,000 worth of paving, done by the city for the street railway companies, during the last five years, has not been paid for, and much of the paving along the horse-car

track is not worth to-day anywhere near so much as new granite paving. *In view of all these considerations,* $15,000 *a mile is a fair allowance for the horse-car track, a total of* $1,720,500.

Cable Track Valuation.

There were 53.47 miles of cable track previous to the transformation of the Third Avenue line to electric, of which 24.1 were left previous to the transformation of the Broadway and ancillary lines. Edward Lauterbach, for fifteen years a director and counsel of the Third Avenue railroad, stated to the New York Assembly committee in 1895 that the cable road in Amsterdam Avenue from 125th Street north cost only $50,000 per mile of single track, although built under great difficulties because the proximity of the Croton aqueduct prevented the use of explosives for blasting, and that the 125th Street road was cabled for $30,000 a mile. Charles E. Warren, secretary of the Metropolitan Company, certified under oath to the tax assessors in 1897 that $3 a foot for straight cable, $7 for substructure, and 70 cents for cable track when new, or about $53,000 a mile, was the full cost of the Metropolitan cable system. The same statement had been made the previous year by Vice-President Hasbrouck of the Metropolitan Street Railway Company. On the completion of the unusually expensive cable road on Third Avenue, the *Street Railway Journal,* in an illustrated and apparently inspired article, declared that the contracts for the construction of 16 miles of track and of other street work, including the cables, on that street, had been placed with William Wharton, Jr., & Co. of Philadelphia, "for the sum of $1,500,000, or about $100,000 per mile of single track," but that after building five and one-half miles the contractor, for reasons that it was not necessary to state, abandoned the contract, and that separate contracts were then made with different parties to finish different portions of the work, "but the cost per mile has doubtless exceeded the original estimate to a considerable extent." Parties connected with the matter state that the contractor was making a small profit at $100,000 a mile, but that the company saw fit to accommodate certain powerful political interests in New York city by giving the contract to people here. Such increase of cost above market price, as *quid pro quo* for political favors, is not here taken into account in connection with structural value or cost.

In view of these statements, and without reckoning the evident depreciation from use before the replacement of the cable system by electric traction, *an ample estimate is* $100,000 *a mile, a total of* $5,347,500.

Cost of Electric Lines.

It is considered that $60,000 a mile should be sufficient for the cost of transformation from cable to electric traction, even in New York city. It has cost only $30,000 in at least one other large city, where, as in New York city, it was not necessary to change the track other than to bond it electrically. At $60,000 a mile, *the additional cost of* 53.47 *miles is* $3,208,200.

There appear to be 13.32 miles of track that have been treated in the several reports as belonging to the slotted-conduit system which are really grooved girder rails on a strong foundation for the use of compressed air and storage battery cars. An estimate of $30,000 is probably sufficient, but at the more liberal allowance of $40,000 a mile, *the cost of this track is* $532,800.

There remain 101.25 miles of comparatively new slotted-conduit track. In June, 1892, while the Fourth Avenue road was being transformed to this system, F. S. Pearson, Chief Engineer of the Metropolitan system, made itemized estimates for the city of Liverpool for a system equal to that in New York with 110-pound rails and of the best construction. This estimate, even for that portion of the road where considerable allowance was made for interruptions by street traffic, was only $64,615 a mile, including transformers, conduits, electrical feeder cables, etc. Allowing for the greater cost of labor in New York—material, as shown by the successful competition of American supply in Great Britain, being approximately the same—an estimate of $100,000 a mile would seem to be ample for New York. The contract with the Receiver of the Third Avenue road for the Forty-second Street line from Fourth Avenue to Eighth Avenue, one of the most difficult pieces of track work in the city because of the number of pipes and conduits in that street, was at about $150,000 a mile, aside from certain materials which cost, in Mr. Pearson's estimate, about $20,000. The *Street Railway Journal* in December, 1897, in an elaborate and illustrated article, evidently semi-official in character, on the Madison

Avenue system, stated that "the engineers estimate that the average cost per mile of single track, including excavation, feeders, conduits and all material employed, is not far from $100,000 a mile." Allowing as much as $125,000 a mile, *the total cost of the* 101.25 *miles would be* $12,656,250.

The 135.34 miles of trolley system north of the Harlem River has, according to the State report, rails weighing 54 to 90 pounds. President Edward A. Maher, of the Union Railway, stated to the New York Assembly committee in 1895 that the best portion of the road, with 90-pound girder rails (still the largest used on the road) and with iron poles, cost only $10,500 to $11,000 a mile, and that by virtue of the charter no paving was required of the company. A few miles of paving have since been laid by the company in towns such as Yonkers and Mt. Vernon, but the extensive country trackage has only dirt ballast and wooden poles. An allowance of $15,000 a mile for track and overhead construction would give for the 135.34 *miles a cost of* $2,030,100. The larger mileage otherwise given is evidently made up of trackage rights, as, under date of April 6, 1901, an official of the company specifically confirmed the figures given in the annual report of the New York Street Railway Commissioners, which are also 135.34 miles.

These figures give a total for the 418.05 *miles of track of all kinds, of* $25,495,350; *an average of* $60,980 *per mile.*

Cars and Horses.

The Metropolitan-Third Avenue systems, according to the latest report—that in the Investment Supplement of the *Street Railway Journal* for 1901—had, in March, 1901, 1,343 horse and service cars, 500 cable cars, and 2,385 electric cars, a total of 4,228 cars—which figures are confirmed substantially by other authorities. The last report of the New York Railroad Commissioners scheduled, in June, 1900, 7,112 horses of the Metropolitan system proper, and 2,209 of the Third Avenue system, a total for both systems of 9,321. The latest changes from cable or horse traction to electric have replaced most of the cable cars with electric cars, giving a total of 2,885 such cars.

The horse cars in New York, just prior to the substitution of electric cars, were probably worth not over $300, but the liberal valua-

tion of $500 is here taken. Electric cars, when new, cost from $2,800 for single-truck cars to $3,900 for long double-truck cars, when bought in small numbers, but in considerable quantities reductions of probably 20 per cent are obtainable. The Second Avenue Railroad Company reported to the state last year that it had bought 275 electric cars at an average price of $2,558. The Receiver's inventory of the Third Avenue system returned the average value of the electric cars in use at about $2,500. This figure of $2,500 is therefore a fair valuation for electric cars in use. In the same inventory, horses were valued at $110 and harnesses at $6. The value of 1,343 horse cars at $500 each, or $671,500; and of 2,885 electric cars at $2,500 each, or $7,212,500, aggregating $7,884,000, and the value of 9,321 horses and harnesses at $116, or $1,081,236, make *a grand total for the equipment of cars and horses on the entire Metropolitan-Third Avenue systems of* $8,965,236.

Loss on Discarded Property.

On June 30th, 1893, about the maximum development of horse-car lines in New York there were 18,643 horses, 2,400 horse cars, and 298 miles of horse-car track, the difference between which and the figures above given would be 9,322 horses (one-half the number), 1,057 horse cars and 183.33 miles of horse-car track. As horses are sold for $60 each, a loss of $50 per horse, or $466,100, $300 per car, or $317,100, and $5,000 per mile of track, or $916,650, give a total of $1,699,850 for discarded horses, horse cars, and horse-car track. To these losses may be added discarded cable and machinery, replaced by electrical machinery, and discarded cable cars, replaced by electric cars, at a loss for which no specific figures can be had, but which can scarcely be so much as $2,000,000.

Value of Realty and Machinery.

The real estate, including power machinery, of the Metropolitan Street Railway Company, September, 1900, was assessed at $8,672,100, which is practically two-thirds of the value reported by the company February, 1900, of $13,296,769, as given in the *Commercial and Financial Chronicle*. In a return of September 30, 1897, to the New York Stock Exchange, the Metropolitan company valued its real estate at $12,071,719. As in listing securities the usual practice is to make the value of the physical properties as large as possible, a deduction of considerable percentage might be made from the figures of

February, 1900, but as the company have made considerable investment since then, in the new power-house at 96th street and East river, the total valuation is here increased to $14,000,000, exclusive of the Third Avenue properties.

For the Third Avenue system, the tax assessment of real estate, which presumably includes besides the power-houses and the land on which they are built the power machinery contained in them, is reported for the Third Avenue line proper and the Forty-second Street, etc., line, supplied from the Third Avenue power-house (54.27 miles), at $2,683,000 (the power machinery and other equipment being inventoried by the Receiver at $636,455.59); for the Dry Dock, etc., line (15.85 miles) at $453,629, and for the Union, etc., trolley lines north of the island (135.34 miles) at $418,929.09 (the power-house machinery and equipment being inventoried by the Receiver at $241,979.58)—a total of realty assessment for the entire Third Avenue system of $3,555,558. Assuming that the assessment valuation is two-thirds the real value of realty, the actual value of the Third Avenue system total realty would be $5,333,337.

The combined Metropolitan-Third Avenue system would thus show a value of $19,333,337. The Receiver of the Third Avenue system also reported in addition to land, buildings and machinery, $1,108,376 horses and cars, $77,787 other materials, $33,871.37 cash (in addition to which the Receiver reported $100,215.10 expenditures by himself for cars and machinery) for the Third Avenue and 42d Street lines, $154,751.05 "total property save land and buildings" for the Dry Dock line, and $703,669.90 for horses and cars, $204,200.19 other material, and $24,929.38 cash, for the Union Railway. These figures apparently duplicate others already taken into account.

Summary of Property.

TRACKAGE—					
Horse-cars	114.67 miles	at	$15,000	$1,720,500	
Cable	53.47 "	"	100,000 }	8,555,700	
" electric transformation	53.47 "	"	60,000 }		
Storage and air	13.32 "	"	40,000	532,800	
Electric conduit	101.25 "	"	125,000	12,656,250	
Trolley	135.34 "	"	15,000	2,030,100	
	418.05				$25,495,350
CARS AND HORSES—					
Horse-cars	1,343 "	"	500	671,500	
Electric-cars	2,885 "	"	2,500	7,212,500	
Horses and harnesses	9,321 "	"	116	1,081,236	
					8,965,236

DISCARDED—		
Horse-car tracks, cars and horses.	$1,699,850	
Others say.....	2,000,000	
		$3,699,850
REALTY AND MACHINERY—		
Metropolitan proper.....	14,000,000	
Third Avenue system.....	5,333,337	
		19,333,337
		$57,493,773

If a further allowance to the extreme amount of $2,500,000 is made for new cars, extra expenses, under-estimates, or unrecorded items, the total cost value is within $60,000,000, and the present replacement value several millions less.

Earnings and Profits.

The Metropolitan-Third Avenue system, in the year ending June 30, 1900, carried 388,313,000 passengers, and after paying total taxes of $1,164,642 (equivalent to 0.3 cents per passenger carried) and all operating expenses, but not interest on bonds, returned a net income of $8,394,749. Of the total income, $310,948.98 was received in dividends by the Metropolitan company—presumably from stock of subordinate railways; deducting this amount, there remains $8,083,800 actual net earnings, or 2.08 cents per passenger. These net earnings of $8,083,800 amount to 4 per cent on $200,000,000, 5 per cent on $160,000,000, 6 per cent on $133,000,000, 8 per cent on $100,000,000, 10 per cent on $80,000,000, or 13.3 *per cent on* $60,000,000, previously reckoned as the *cost* value of the physical property.

The combined Metropolitan system reported for the year ending June 30, 1901, a total of 303,418,360 paying passengers and 175,640,150 transfers (56 per cent), in all 479,058,510, at an average fare (transfers included) of 3.16 cents.

Rentals of Leased Lines.

The Metropolitan Street Railway paid, in the year ending June 30, 1900, rentals of $2,629,718.32, equivalent to 4 per cent on $65,742,952. As the physical properties acquired in most of these leases were mostly old horse-car track and rolling stock promptly discarded, these figures represent almost exclusively payment for franchises or rights of way given to the railways by past city and state governments.

President Vreeland, at the stockholders' meeting in May, 1900 (*N. Y. Times,* May 18, *Chronicle,* May 19), added to the significance

of these figures by his statements regarding these rentals: "We pay to the stockholders of the 23rd Street line 18 per cent on its capital stock, and yet no less than $300,000 comes into the treasury of the Metropolitan as net income." The 23rd Street railway, with only 4.12 miles of track and 12.98 miles operated under trackage rights, has $600,000 outstanding stock and $400,000 bonds, so that after paying $22,500 bond interest and $108,000 rental on stock at 18 per cent, the net income of $300,000 represents 50 per cent earnings, showing a total net return of 68 per cent on stock.

President Vreeland also said: "The Sixth Avenue line, as connected at 59th street with our Amsterdam Avenue and Lexington Avenue cars, enables us to pay an annual rental of $145,000 and all taxes, and at the same time return to the Metropolitan $800,000 in annual profits." This line, with about 12 miles of electric track, has $2,000,000 stock, so that $945,000 is equivalent to 47½ per cent on stock, although allowance should be made for the new rolling stock and other improvements of the Metropolitan company which, however, would scarcely exceed $500,000, making in all $2,500,000 on which the net income would be 37.8 per cent. President Vreeland has further said: "A somewhat larger sum is earned from the Fourth Avenue line under similar conditons of profit to its own stockholders and bondholders." These conditions are that the Fourth Avenue line, known in the reports as the New York and Harlem, received $350,000 yearly rental for its 19.4 miles of track up to July, 1900, and will hereafter be paid $400,000 on the 999-year lease, this rental of $20,000 a mile being also solely for the right of way, or franchise, since the horse-car tracks originally leased have been transformed into the electric system.

Payments Due the City.

The City Revenue Bureau reported to the Comptroller, Dec. 31, 1900, that the license of $20 to $50 per car, and the percentage of 3 to 5 per cent of gross receipts payable to the city by many of the lines should have yielded last year $325,293, being about 1.8 per cent of gross receipts or 4 per cent. of net income, but the roads were $215,525 in arrears. (The Comptroller's report for 1900 shows $48,580 paid the city in car licenses and $303,730.73 in percentage of gross receipts, with back taxes of $150,000.) The Metropolitan company reported $117,000 expenditure for cleaning and paving streets in the previous

year, but the city officials claim $400,000 arrears for paving in the last five years.

Franchise Tax.

The valuation of the New York State Board, under the Ford special franchise tax law, on the Metropolitan-Third Avenue system franchises was $68,985,418, making at 2.24771 per cent a tax of $1,550,592 for 1900, and $67,260,397, making at 2.31733 per cent a tax of $1,558,645 for 1901. It is difficult to state the basis of this appraisal, which seems to be at least one-half of the excess of market value of securities, or of capitalized value at 4 per cent on net earnings, above the value of the physical properties.

Capitalization—Value of Securities.

The capital stock of the Metropolitan Street Railway Company is $52,000,000, and that of the Third Avenue Railroad $16,000,000. Of the $52,000,000 Metropolitan stock, $7,000,000 was issued to stockholders in December, 1900, at $160 per share. Deducting the majority interest in Third Avenue stock held in the Metropolitan treasury, which is known to be about $9,000,000, leaving about $7,000,000 Third Avenue stock and $909,400 subsidiary stock outstanding, and adding $10,255,400 Metropolitan subsidiary stocks outstanding, the total stock capitalization at par is $70,164,800. The Metropolitan and subsidiary bonds outstanding amount to $45,436,000, to which is to be added a mortgage on car barns of $950,000 held by the Mutual Life Insurance Company, and the par value of Third Avenue and subsidiary bonds to $48,443,000, a total of $94,829,000 outstanding bonds. The Third Avenue bonds as here stated cover as much of the $50,000,000 mortgage guaranteed by the Metropolitan company as has been issued.

At the average quotations from the maximum and minimum figures of 1900 (including the abnormal drop of Third Avenue stock to 45½ on March 2, 1900), and computing the $7,000,000 at the offered price, the market value of the $62,255,400 Metropolitan stocks is $107,386,272, and of the outstanding $7,909,400 Third Avenue stocks is $6,981,920. The $950,000 mortgage is taken at par. The Metropolitan bonds of $45,436,000 par have a market value of $52,745,519, and the Third Avenue bonds of $48,443,000 par, of

$52,546,040; together the Metropolitan-Third Avenue system has, including securities of $164,993,800 par, *a market value of* $220,609,751. This is a very conservative estimate, for the market values of the securities are very much above the figures used for computing the values of the securities.

Value of Franchises.

The actual cost of the Third Avenue-Metropolitan system, including losses from discarded material not taken up in operating expenses, has been estimated as within $60,000,000. The interest on $30,000,000 bonds at 4 per cent would be $1,200,000 and dividends at 8 per cent on $30,000,000 stock would be $2,400,000—a total of $3,600,000. Out of the net earnings of $8,000,000 reported there would remain $4,400,000, *an amount which in a few years would outrun* $5,000,000 *yearly, representing the yearly value of the franchises.* This represents more than one cent per passenger carried, and with the increase of business that would come with a three-cent fare it seems probable that fixed charges of 4 per cent on bonds and dividends of 8 per cent on stock could be earned on a three-cent fare, or the general city tax rate, by a proper compensation to the city, could be correspondingly lowered.

A comparison of the market value of the securities ($221,000,000) with the cost value of the physical property ($60,000,000) and the par value of the securities ($165,000,000) introduces some very suggestive conclusions. The excess of securities over physical property—some $100,000,000—is water. The capitalized value of the franchise is at least $160,000,000 upon the basis of the original cost value and probably exceeds $175,000,000 taking the present market value of the physical property.

Early Legislation.

Previous to 1850 street railways were practically unknown, the business of conveying passengers over the streets in New York being conducted almost exclusively by stage lines licensed for that purpose. The single exception was a street railway of the New York & Harlem Railroad, which had received a charter as a steam railroad by special act of the legislature in 1831 (Laws of 1831, Chap. 263) and which afterward took up the business of conveying passengers in street cars

over rails used also for freight cars, through Fourth avenue, the Bowery and Centre street. Under successive permits of the Common Council it was authorized in 1852 to extend its passenger business to City Hall park.

The General Railroad Law of 1850 (Laws of 1850, Chap. 140) provided for the incorporation, construction and operation of steam surface railroads, but it did not in terms make provision for street railroads in cities. Street railways were, nevertheless, incorporated under this act, although such incorporation was of doubtful validity (see opinion of Judge Rapallo in New York Cable Co. *vs.* Mayor, 104 N. Y., 14).

In 1851 (Sept. 5), the common council of New York city made grants of the franchises for the Sixth and Eighth Avenue lines, and up to 1859 granted several other franchises, including that of the Third Avenue Railroad, substantially in the form of a contract between the city and certain individuals named as grantees and their associates, giving to them and their assigns the right to construct and operate a street railroad over certain streets, subject to the control of the common council. In some of the grants, as in those of the Sixth and Eighth Avenue lines, the city reserved the right to purchase the lines at a stated percentage above cost.

The first grant of a Broadway franchise, in December, 1852, to Jacob Sharp and associates caused property owners on Broadway to attack the franchise on the ground, among others, that the common council had no power to grant a street railroad franchise, but the question did not reach the Court of Appeals for final decision until 1863.

State Legislature Makes Grants.

Meanwhile, the legislature had passed an act in 1854 (Laws of 1854, Chap. 140) amending the general railroad act of 1850 by providing that no grant for a street railroad "wholly within a city" should be made without the previous consent of a majority in interest of the abutting property owners. Upon such consent, the common council might authorize a street railroad upon such terms as it might impose, but only to persons who would give adequate security to comply with the conditions and carry passengers at the lowest fare. Public notice of the time and conditions of the sale had to be given, thus, in effect, providing for public sale of the franchises. The act, however, approved and confirmed previous grants to roads already in operation,

which legalized all questionable grants except that of the Broadway road, which had not been constructed.

In 1860 the legislature passed an act (Laws of 1860, Chap. 10) declaring that it was unlawful to construct and operate a street railroad in the city of New York except under the authority which the legislature might thereafter provide, but it excepted roads already in operation and declared that it should not impair any valid grant existing January 1, 1860. Under this law the legislature granted numerous charters, giving to persons named and their associates the right to construct and operate street railroads in certain designated streets, subject to such reasonable rules and regulations as the common council might require. Provision for acquiring necessary real estate and for trackage rights over other roads was made in conformity with the general railroad law of 1850, and the use of the streets for railroad purposes was declared to be a public use, and the city officials were directed to protect and forward the construction of the roads authorized, while specifically forbidden to recognize the rights of any street railway claimed under the general railroad law (Laws of 1860, Chaps. 511–515 incl.). The charter of the Broadway and Seventh Avenue line, the Belt line and the Bleecker Street line, were among those thus granted.

The position taken by the legislature that it could grant local franchises over the streets of New York city without the consent of local authorities or of abutting property owners, was promptly challenged. The case reached the Court of Appeals in 1863, when the Broadway case was also decided. The Court of Appeals held that the grant of a franchise by the common council was void because there was no power in the council to make such grant (Milhau *vs.* Sharp, 27 N. Y., 610); that the city of New York held title to the streets as trustee for the people of the state at large, and therefore the legislature and not the city had the right to authorize a street railroad (People *vs.* Kerr, 27 N. Y., 188); and the grants of the common council were therefore voided except as far as they had been validated by subsequent legislation. These decisions left the legislature supreme, for the act of 1860, repealing Laws of 1854, Chap. 140, had vested every right in the legislature.

General Legislation.

The public opposition to such unlimited power resulted in a constitutional amendment (Art. III., Sec. 18) which took effect January

1, 1875, providing that no special charter should be given to construct a street railroad, but that general laws should be passed by the legislature for that purpose, and requiring the consent of the local authorities and of one-half in interest of the abutting property owners, or, in lieu of the latter, the approval of the Supreme Court. The legislature did not comply with this mandate until 1884, when it passed a general street railway law (Laws of 1884, Chap. 252). Until this act, a street railway could be organized only under the general railroad act of 1850, or the rapid transit act of 1875 (Laws of 1875, Chap. 606), which last was in form a general law for "a steam railway or railways in counties of the state" passed really to authorize elevated railroads but construed by the courts to authorize a street surface road with power other than animal. (N. Y. Cable Co. *vs.* Mayor, 104 N. Y., 16.) There were grave doubts as to the validity of the incorporation of street railways under the genral law of 1850, and the rapid transit act did not authorize railways where animals were the motive power.

It was to meet these difficulties and to provide more completely for street railway systems that the first complete surface street railway act of 1884 was passed. It embodied the constitutional provision, and provided that no franchise should be granted in cities of over 250,000 inhabitants except on condition that the road should pay to the city 3 per cent of its gross receipts for the first five years and 5 per cent thereafter. Many companies were organized under this act, but its weakness was shown when the "Boodle Board" of Aldermen, in 1884, granted the Broadway franchise to Jacob Sharp at the minimum price fixed by the act, in the face of much more favorable offers. Provisions that franchises should be sold at auction to the corporation offering the largest percentage of gross receipts, applying first to cities of over 40,000 inhabitants and finally, in effect, only to the city of New York, were made by legislation from 1886 to 1893 (Laws of 1886, Chaps. 65, 642; 1889, c. 564, 281; 1890, c. 565, 93; 1892, c. 306, 616; 1893, c. 434). The act of 1884 as amended, was substantially included, by the statutory revision commission of 1890, in the laws of 1890.

The scandals as to the Broadway franchise caused the legislature in 1886 to pass special acts (Laws of 1886, Chaps. 268, 271, 310) annulling the charter of the Broadway Surface Railroad, and providing for winding up its affairs. The Court of Appeals, however, decided, in 1888 (People v. O'Brien, 111 N. Y. 1) that, while the

legislature might annul the charter, it was unconstitutional to take away the franchise or right in the street, which was held to be perpetual and indefeasible as granted and to be vested in the directors as trustees for the creditors and shareholders.

Grants under Greater New York Charter.

Important changes in the method of granting franchises were made by the charter of Greater New York (Laws of 1897, Chap. 378). It is provided that no franchise shall be granted for more than 25 years, except that the grant may provide for renewals not exceeding 25 years more, at a fair valuation. The grant may provide that the city shall become the owner of the property of the grantee at the end of the term without further compensation; or for the right of the city to purchase at the end of the term at a fair valuation. If the grant provides that the city may take the property, without further compensation, at the end of the term, then the city has the option to take and operate the property on its own account, or it may renew and lease the property and grant for not over 20 years, at fair valuation. If the grant provides that the city shall take the property at fair valuation the payment shall be of the fair valuation exclusive of the franchise. If the city buys, it must operate the property on its own account for at least five years. After that, it may operate or lease for limited periods in the same manner as it now leases docks and ferries. Every grant shall contain adequate provision to secure efficient public service at reasonable rates and to secure the maintenance of the property in good condition throughout the term of the grant. The grant must specify the method of determining valuation. Elaborate provision is made for the procedure in case of application for grants of franchises. The proposed grant, in form of an ordinance, must be printed and published; on its first reading must be referred to the board of estimate and apportionment who must make inquiry into the value of the grant and the adequacy of the proposed compensation, and their approval is necessary before any grant can be made. Three-fourths of the members of each house must vote in favor of the ordinance, or, in case of veto by the mayor, the vote of five-sixths of each house is required. No provision is made in terms for the public sale of fran-

chises. The provisions of the general law compelling such sale (Railroad Law, Sec. 93) are declared not to apply to grants made under the charter (section 77), while a provision elsewhere in the charter declares that nothing contained in the charter shall repeal or in any manner affect the existing railroad laws of the state in respect to street railroads (Section 45). (These provisions were in sharp conflict and left the question whether franchises must be sold at public sale uncertain.)

The new charter also provided specifically (Secs. 1458–1461) as to stage and omnibus lines, that no route shall be granted unless a majority of abutting owners consent in writing and the mayor shall approve and both houses of the municipal assembly shall give a three-fourths vote of all the members elected; such stage route or privilege shall be disposed of in the manner provided by law for the disposition of franchises, and the ownership thereof may be transferred.

The Revised Charter of Greater New York (Laws of 1901, Chap. 466) continues (Sec. 71, etc.) the general provisions as to franchises of the original charter, substituting the single chamber of the board of aldermen for the two chamber municipal assembly, as to power to grant franchises and rights in *or under* the streets, avenues, *waters, rivers, public places,* parkways and highways of the city—the words in italics being additions in the revision. By a new section (Sec. 48), the board of aldermen is required to act promptly, by a final vote within six weeks after vote of the board of estimate and apportionment, upon any proposed franchise, and if a majority of all members of the board shall not vote against such franchise within six weeks, then it shall be deemed to have been passed, subject to the approval or veto of the mayor. The provision is continued (Sec. 73) that franchises shall be confined to 25 years, with renewals not exceeding in the aggregate 25 years more, except that a franchise for a tunnel railroad may be granted for any period not exceeding 50 years, with renewals up to 25 years. At the termination of any franchise, "all the rights or property of the grantee in the streets * * * shall cease without compensation"; but this use of the word "property" does not cover "plant," which is to become the city's, without or with money payment, as previously provided, and the terms of this section seem to

raise a new question of conflict. The provisions as to stages and omnibuses are brought together and modified (Sec. 53). The negative provision new in the revision, that no license granted under this section shall confer any *exclusive* right without consent of a majority of abutting owners, with the continuing provision that the ownership of such route may be transferred, seems to open the way to a monopoly stage line system.

Charter Rights.

The legislative and other history of street railways in New York raises many questions as to the rights, obligations, and liabilities of the several lines and of the Metropolitan Street Railway Company, under which they are combined. Charters have, apparently in all cases, been confined to specified streets, and a detailed investigation would be necessary to determine where, in connecting up the several lines, the present unified system had exceeded charter rights. Several of the early charters provided specifically, as stated, for the right of the city to take over the lines at specified percentages over cost, or on other conditions stated. There are also included in the several charters, obligations as to fares, service, etc., which demand careful comparison. To what extent the legislature has the right to repeal privileges, and how far such special charters as that of the Union or "Huckleberry" Railroad are valid, are questions of the first moment. There are also grave questions as to the results to the Metropolitan Street Railway Company from exceeding its charter by selling electric current for other than its own or railway purposes, and possibly from making under the streets constructions not authorized by or proceeding from its charter rights. Finally, there remains the largest question of all, whether the inalienable sovereignty of the people of the state in the land, including the streets of a city, does not prevent the legislature from creating or transferring rights over land beyond recall, and whether, therefore, the right of eminent domain may not be exercised in behalf of the people, for the superior public corporation, the municipality, as against a private corporation, as well as in behalf of a private corporation as against individuals.

XUM

Recommendations.

The writer would suggest to the public and to the new municipal administration the desirability of pursuing further these investigations, as can be done only by an official or committee authorized to make such investigations and to send for persons and papers, so that the books of the Metropolitan Street Railway Company and of subsidiary companies can be examined and the testimony of their officials taken. In such an investigation, particular attention might well be paid to charter rights. It would be especially valuable could an authoritative map be presented showing, in the case of each street or portion of street, under what legislative grants or charter rights the railway lines thereon are operated, so that any extensions or connections made without authority of law might be determined. Wherever the company has transgressed its rights under charter privileges, these violations of law—many if not most of them in the interest of better service to the public—should be made the means of obtaining from the company surrender or modification, in the interests of the municipality and its people, of undue rights or privileges which it has acquired by legal methods. The application of the company for the use of Elm street for street railway purposes might also be made the occasion for obtaining concessions from the company, such as the surrender of its street rights, and of its trackage directly associated with the streets, to the municipality not later than December 31, 1999, on a valuation then or now to be made, as well as the extension to all its lines of the five per cent which it is obliged to pay to the city on some lines. Inquiry should also be made into conditions as to the recovery by the municipality of the grants authorizing the construction of certain lines, as those of Sixth and Eighth Avenues, to make sure that rights of recovery are not allowed to lapse. Nothing should be done to interfere with the handling of the street railway system in Manhatttan as a unified whole or to embarrass the Metropolitan Street Railway Company in endeavors to give the public the best possible service; but the importance of using every opportunity to recover for the people what rightly belongs to them, without injustice to any rights properly belonging to the Metropolitan Street Railway Company and the holders of its securities, cannot be over-emphasized.

MUNICIPAL ELECTRIC LIGHTING IN CHICAGO.

EDITORIAL COMMENT.

The problem of municipal ownership and operation cannot be settled definitely by a priori reasoning; it must be illuminated by actual experience. There are in the United States some four or five hundred municipal electric lighting plants, most of which are located in the smaller cities and towns. The largest city having a municipal plant is Chicago, and although it does not do commercial lighting, being confined to public lighting, its experience is of interest and value as throwing light upon municipalization under existing conditions and in our own country.

The following report is the result of an investigation into the finances of the Chicago plant, made by Haskins and Sells, certified public accountants of the State of New York. It attempts neither to argue the question of municipal operation nor to demonstrate success or failure. It aims merely to state the facts from the financial point of view.

But institutions are not to be approved or condemned simply because they are financially successful or unsuccessful. There are other factors to be taken into consideration—factors that affect social well-being materially. Hence we have requested Dr. John R. Commons to interpret the report and to add such other data as will determine whether this instance of municipal activity has been upon the whole a success or a failure.

The recent referendum in Chicago upon the question of municipal ownership of gas and electric light plants—124,190 votes in favor and only 19,007 against—although it has no immediate legal effect, is certain to influence the position taken by candidates for office and lead to definite action for the realization of so popular a program.

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ACCOUNTANTS' REPORT.

NEW YORK REFORM CLUB,
COMMITTEE ON CITY AFFAIRS:

GENTLEMEN—We have made an examination of the books and accounts of the city of Chicago for the period, January 1, 1887, to December 31, 1900, in so far as they relate to the Electric Lighting Department.

We submit herewith in relation thereto nine exhibits, lettered "A" to "I," with our comments thereon, as follows:

Exhibits—

"A"—Cost of construction.

"B"—Cost of operation.

"C"—Cost to the city if lamps had been lighted by a private company.

"D"—Statistics; cost per lamp on the basis of the electrical capacity of the plants; cost of operation and maintenance per lamp, and per lamp hour, with estimated allowance for meter, insurance, taxes, depreciation and interest; cost of operating and maintaining one lamp per year, with estimated allowance for meter, insurance, taxes, depreciation and interest; coal consumed per year, per lamp hour, cost per lamp hour and average number of lamp hours per lamp for four years ended December 31, 1900.

"E"—Description and value of real estate occupied by the municipal electric lighting system, based on original cost.

"F"—Equipment, conduits and circuits.

"G"—Size, cost and number of carbons received and used in 1900 and average burning capacity of each, and the cost and number of globes of each pattern received and used in 1900.

"H"—Number and kind of lamps in operation; average number of hours lamps were lighted each night, by months; location of lamps, and number and pattern of lamps sent for repairs to other than city shops and cost per lamp for same, for the year 1900.

"I"—Recapitulation of machinery and equipment owned December 31, 1900.

Property and Plants.

The first expenditure by the Department for property was made in 1887, and thereafter to January 1, 1901, the yearly additions to each plant, classified as to the character of the addition, are shown in detail in Exhibit "A." At the end of each year an estimated depreciation of 5 per cent. of the value of the property (except real estate) is deducted from the total valuations. On this basis the value of the property January 1, 1901, is shown to have been as follows:

Plant No. 1	$64,568 50
Plant No. 4	40,177 69
Plant No. 6	129,334 56
Plant No. 8	92,439 88
R. A. Waller Plant	76,589 66
General—Lamps, circuits, conduits, posts, etc	756,737 36
Total value	$1,159,847 65

The amounts charged for superintendence of construction (Exhibit "A") were estimated by the city electrician, the original charge for this branch of the department having been included in the general pay-roll. These amounts apply to all plants, but as a matter of convenience are classified under "General."

Of the eight plants covered by this report, only four were in operation December 31, 1900, viz.:

No. 1—Fourteenth street and Indiana avenue.

No. 6 (New)—No. 297 South Halsted street.

No. 8—Rice and Lincoln streets.

R. A. Waller—Sixty-third and Wentworth avenue.

Of these four plants but three were in full operation during 1899, the R. A. Waller plant being in course of construction.

The operation of the River street and Jefferson street plants was discontinued during 1890 and the equipment distributed in even amounts as to value between Plant No. 1—Fourteenth street and Indiana avenue—and Old Plant No. 6—Throop street.

In the latter part of 1892 the Throop street plant was sold to the Metropolitan Elevated Railway Company for $100,000 cash and seven lots, valued at $30,000, but the plant was not turned over to the purchasers until December, 1896, the Department occupying and operating it free of rental during this period of four years.

The Chicago avenue and Sedgwick street plant (Plant No. 4) was discontinued in 1900, the circuits being operated from the Rice and Lincoln streets and Fourteenth street and Indiana avenue plants. Portions of the equipment were sent to the Rice and Lincoln streets plant (No. 8) and to the R. A. Waller plant. In connection with this plant a garbage crematory is being erected and paid for by the Electric Lighting Department, the consideration being the running of one boiler by the heat from the crematory. There is now no available electrical

equipment at this plant. The lamp trimming department has a space about 12 by 15 feet partitioned off for use as a repair shop; the second floor is used as a repair shop for gas lamps.

Plant No. 1, at Fourteenth street and Indiana avenue, was shut down February 1, 1901, and a watchman placed in charge of the equipment. The circuits of that plant were transferred to the R. A. Waller plant and to New Plant No. 6.

In 1899 the West Park Board ostensibly turned over to the city its electric lighting department, consisting of 203 lamps, poles, conduits and circuits, but a legal transfer has not been made, nor has the City Electric Plant Construction been charged with its cost, and the department is at the expense of operating and maintaining this equipment, for which it gets no credit other than as a public benefit. During 1900 the city replaced 96 of these lamps. The other 107 are in poor condition.

The real estate occupied by the Department, valued at $117,275.24, per Exhibit "E," includes two lots owned by the water department, valued at $71,000. Plants No. 1 and No. 4 are located on these lots.

Operation.

The cost of operation, the average number of lamps in operation and the average cost per lamp are shown in detail, by years, on Exhibit "B."

Charges for maintenance	$168,371 83	
Charges for operation	1,275,228 99	
Total actual expenditures made by the department for maintenance and operation		$1,443,600 82
To this we have added, to arrive at the total cost:		
For water, estimated at $4 per h. p., the rate furnished by the water department	$114,325 00	
For insurance, based on rates furnished by an insurance company	4,081 00	
For taxes, based on the tax rates of the city	85,784 30	
For depreciation, at 5 per cent. on value of property, excepting real estate	478,575 64	

For interest, at 4½ per cent. on the investment	$430,166 85	
Total added		$1,112,932 79
Total charge for the period		$2,556,533 61

The amounts charged for office expense, Exhibit "B," were estimated by the city electrician, the original charge for this branch of the Department having been included in the general pay-roll.

The increase of $103,113.88 in the maintenance and operating expenses and fixed charges of 1900 over those of 1899 was caused mainly by the R. A. Waller Plant being placed in operation during 1900. The average cost per lamp for 1900 increased over 1899 only $2.02, and this increase was due largely to the increased rate for fuel and the increased tax rate.

The following tables show the total cost of operation and the cost per lamp compared with the probable cost if the city had contracted for the lamps it actually lighted with the private company which supplies a portion of the city. These figures are given in the last column—"Cost if Rented"— and were obtained from the city electrician. The number of lamps under contract varied from one hundred to five hundred during the period of thirteen years.

TOTAL COST OF OPERATION, 1888 TO 1900, INCLUSIVE.

Year.	Actual Cost.	Estimated Water, Insurance, Taxes, Depreciation and Interest.	Total Cost.	Cost if Rented.
1888.....	$16,281 52	$15,338 98	$31,620 50	$38,400 00
1889.....	38,498 85	40,634 34	79,133 19	54,945 00
1890.....	70,930 26	69,414 95	140,345 21	157,500 00
1891.....	130,597 12	84,381 51	214,978 63	173,775 00
1892.....	112,987 92	85,108 70	198,096 62	192,850 00
1893.....	113,123 13	83,903 15	197,026 28	173,750 00
1894.....	114,439 72	86,631 38	201,071 10	152,350 00
1895.....	115,249 52	95,700 10	210,949 62	153,450 00
1896.....	113,521 92	90,099 65	203,621 57	172,425 00
1897.....	113,337 60	85,281 74	198,619 34	197,725 00
1898.....	107,042 87	104,678 86	211,721 73	226,285 00
1899.....	157,498 52	125,619 45	283,117 97	355,635 00
1900.....	240,091 87	146,139 98	386,231 85	458,020 50
	$1,443,600 82	$1,112,932 79	$2,556,533 61	$2,507,110 50

COST OF OPERATION PER LAMP, 1888 TO 1900, INCLUSIVE.

Year.	Number of Lamps.	Actual Cost.	Estimated Water, Insurance, Taxes, Depreciation and Interest.	Total.	Cost if Rented.
1888.....	192	$84 80	$79 89	$164 69	$200 00
1889.....	297	129 62	136 82	266 44	185 00
1890.....	900	78 81	77 12	155 93	175 00
1891.....	993	131 52	84 98	216 50	175 00
1892.....	1,102	102 53	77 23	179 76	175 00
1893.....	1,112	101 73	75 45	177 18	156 25
1894.....	1,108	103 29	78 19	181 48	137 50
1895.....	1,116	103 27	85 75	189 02	137 50
1896.....	1,254	90 53	71 85	162 38	137 50
1897.....	1,438	78 81	59 30	138 11	137 50
1898.....	272 1,438	62 60	61 21	123 81	105 00 137 50
1899.....	1,297 1,596	54 44	43 42	97 86	105 00 137 50
1900.....	2,136 1,731	62 09	37 79	99 88	105 00 137 50

The disparity between the estimated cost per lamp for water, insurance, taxes, depreciation and interest for the years 1898, 1899 and 1900 is partially accounted for by the fact that the 203 lamps which, together with equipment, were turned over to the city electric plant by the West Park Board in 1899 are included in the number of lamps operated during that year and 1900, although their value is not included in the construction accounts. These figures were further reduced in the year 1900 by economies effected in charges to construction by the use, without charge, when conditions permitted, of the poles of other companies for supporting wires and lamps.

Statistical.

The statistics shown by Exhibits "D," "G" and "H" cover such years as could be compiled from the records of the department.

The amount invested in the plants per lamp, figured on the basis of the electrical capacity of the plant, was $34.46 greater in 1900 than in 1899. This was due mainly to the increase of the amount invested in buildings and equipment and the extension of circuits and conduits.

The total number of lamp hours for 1900 was 3,430,188 in excess of the lamp hours for 1899.

The estimated number of feet of conduits constructed during the years 1887 to 1900 was, as shown by Exhibit "F," as follows:

3-inch vitrified clay pipe	210,149 feet.
3-inch steel pipe	1,505 "
2½-inch steel pipe	6,755 "
2-inch iron pipe	694,604 "
Total	913,013 feet.

The total number of feet of circuits constructed was, as shown by the same exhibit, 1,467,593, with 1,104 manholes and 109 handholes. There were 3,417 poles, with overhead circuits of 571,760 feet.

The estimated capacity of the power-houses, in 2,000 c. p. lights, was 5,275. The horse-power of engines installed was 3,350. The number of arc lights placed in operation was 4,239.

Exhibit "H" shows the different kinds of lamps in operation during 1900, amounting to 4,241; the average number of hours lights were burning each night, by months, varying from 8½ hours for May, June and July to 14 hours for November and December, and the location of lamps in operation during 1900, as follows:

Water department	66
Fire department	19
Electric lighting plants	38
Street lamps	3,744
Total	3,867

Also the number of lamps sent out for repairs during 1900 and the cost per lamp.

Exhibit "G" shows carbons received, during 1900, amounting to 1,576,500, and used, amounting to 1,507,166; and the average burning capacity to be ten hours each; the number of globes received during 1900, 4,446, and the number used, 4,124.

General.

A comparison of the inventory published by the electric lighting department, as of December 31, 1900, with Exhibit "I," hereto attached, shows a discrepancy in the number of 125 h. p. Ideal engines on hand. The inventory of the department shows eight, whereas there were actually but four on hand. Twelve engines were

originally purchased and one was added later, making a total to be accounted for as follows:

6—Included in sale of Plant No. 6 to Metropolitan Electric Railway Company.
2—Now at Chicago avenue and Sedgwick street.
2—Now at Indiana avenue and Fourteenth street.
2—Sold by city to Warren Springer, for which no credit was given department.
1—Sent to Bridewell, for which no credit was given the electric lighting department.

The steam and electrical equipment in the different electric-light plants now operated by the city is in all respects modern in character. The engines are of the cross compound condensing type, the boilers of large unit water tube type and the steam piping is all double strength steel. Automatic furnaces are in use under the boilers in all of the stations. The dynamos are modern, large unit machines, the smallest having 100 lights capacity and the majority 160 lights capacity. The buildings are modern, of entirely fire-proof construction and in good repair.

The results set forth in this report were obtained by an examination of the books and vouchers in the office of the city comptroller and the department of electricity, by reference to council proceedings, comptroller's reports, reports of the city electrician, by interviews with the various heads of the departments and by an inspection of the various plants.

Yours truly,

HASKINS & SELLS,
Certified Public Accountants.
New York, Chicago, St. Louis, London.

Exhibit "A"—Cost of Construction of Plants.

CHICAGO ELECTRIC LIGHTING DEPARTMENT.

	River Street Plant.	Jefferson Street Plant.	Throop Street Plant.	Plant No. 1.	Plant No. 4.	Plant No 8.	General.	Total.
1887.								
Building	$1,916 33							$1,916 33
1888.								
Jan. 1. Balance	$1,916 33							
Grounds		$10 00						10 00
Buildings	285 46	11,182 78						11,468 24
Steam plant	13,283 44	18,552 62						31,836 06
Electric plant	7,663 30	20,664 45						28,327 75
Lamps							$12,036 51	12,036 51
Circuits							40,201 08	40,201 08
Conduits							36,494 21	36,494 21
Posts							2,580 01	2,580 01
Superintendence							1,900 00	1,900 00
Total	$23,148 53	$40,409 85					$93,211 81	$156,770 19
*Depreciation	1,157 43	2,019 99					4,660 59	7,838 01
1889.								
Jan. 1. Balance	$21,991 10	$38,389 86					$88,551 22	$148,932 18
Grounds			$23,040 50					35,340 50
Buildings		1,574 05	11,461 13		$12,300 00			38,223 33
Steam plant		4,598 65	6,368 64	$13,250 95	11,937 20			25,774 73
Electric plant		4,008 98	50 00	8,440 23	6,367 21			4,158 98
Lamps				50 00	50 00		3,227 07	3,227 07
Circuits							37,602 42	37,602 42
Conduits							130,088 63	130,088 63
Posts							6,579 27	6,579 27
Superintendence							1,900 00	1,900 00
Total	$21,991 10	$48,571 54	$40,920 27		$21,741 18	$30,654 41	$267,948 61	$431,827 11
*Depreciation	1,099 55	2,428 08	893 99		1,087 06	917 72	13,397 43	19,823 83
1890.								
Jan. 1. Balance	$20,891 55	$46,143 46	$40,026 28		$20,654 12	$29,736 69	$254,551 18	$412,003 28
Buildings			5,723 19	$11,402 52	3,515 01	4,850 10		25,490 81
Steam plant			20,438 58	5,120 22	14,100 91	15,036 13		54,695 84
Electric plant			6,546 00		10,346 17	10,045 18		26,937 35
Lamps							16,643 51	16,643 51
Circuits							55,159 32	55,159 32
Conduits							79,170 34	79,170 34
Posts							2,875 00	2,875 00
Teams							206 65	206 65
Superintendence							1,900 00	1,900 00
Total	$20,891 55	$46,143 46	$72,734 05	$16,522 72	$48,616 21	$59,668 10	$410,506 00	$675,082 10
*Depreciation	1,044 58	2,306 67	2,184 68	826 14	2,430 81	2,368 40	20,525 30	31,986 58
1891.								
Jan. 1. Balance	$19,846 97	$43,836 79	$70,249 37	$15,696 59	$46,185 40	$57,299 70	$389,980 70	$643,095 52
Buildings			239 41	4,332 45	35 81	600 75		4,607 67
Steam plant			1,927 05	25,485 51	1,733 89			29,147 20
Electric plant			3,205 95	13,153 55	1,000 00			17,359 50
Lamps							15,197 78	15,197 78
Circuits							29,241 52	29,241 52
Conduits							35,576 87	35,576 87
Posts							15,972 63	15,972 63
Signs							2,049 23	2,049 23
Superintendence							1,900 00	1,900 00
Total	$19,846 97	$43,836 79	$75,621 78	$58,668 10	$48,355 10	$57,900 45	$489,918 73	$794,147 92
*Depreciation	992 35	2,191 34	2,629 06	2,933 40	2,417 76	2,280 02	24,495 94	37,939 87
Transferred to Throop Street Plant and Plant No. 1	$18,854 62	$41,645 45	$72,992 72	$55,734 70				
			30,250 04	30,250 03				
Balance carried forward			$103,242 76	$85,984 73	$45,937 34	$55,620 43	$465,422 79	$756 208 05

* Depreciation is computed at 5 per cent., except on real estate, and is charged to operation.

Exhibit "A"—(*Continued*).

	Throop Street Plant.	Plant No. 1.	Plant No. 4.	Plant No. 6.	Plant No. 8.	R. A. Waller Plant.	General.	Total.
1892.								
Jan. 1. Balance.	$103,242 76	$85,984 73	$45,937 34	.....	$55,620 43	.....	$465,422 79	$756,208 05
Buildings.....	232 43	539 81	232 24	.....	205 00	.....	.....	1,209 48
Steam plant.....	.....	514 59	1,272 00	.....	.....	.....	.....	1,786 59
Electric plant...	.....	.....	3,825 00	.....	.....	.....	.....	3,825 00
Lamps.....	.....	.....	.....	.....	.....	.....	2,396 15	2,396 15
Circuits.....	.....	.....	.....	.....	.....	.....	7,453 32	7,453 32
Conduits.....	.....	.....	.....	.....	.....	.....	12,130 93	12,130 93
Posts.....	.....	.....	.....	.....	.....	.....	5,725 12	5,725 12
Superintendence	.....	.....	.....	.....	.....	.....	1,900 00	1,900 00
Total.....	$103,475 19	$87,039 13	$51,266 58	.....	$55,825 43	.....	$495,028 31	$792,634 64
*Depreciation...	4,021 47	4,351 71	2,563 33	.....	2,176 27	.....	24,751 42	37,854 20
1893.								
Jan. 1. Balance.	$99,453 72	$82,687 42	$48,703 25	.....	$53,649 16	.....	$470,276 89	$754,770 44
Grounds.....	.....	.....	.....	.....	973 40	.....	.....	973 40
Buildings.....	.....	271 26	163 80	.....	.....	.....	.....	435 06
Steam plant....	.....	.....	645 00	.....	.....	.....	.....	645 00
Electric plant...	.....	450 00	51 00	.....	.....	.....	.....	501 00
Lamps.....	.....	.....	.....	.....	.....	.....	646 50	646 50
Circuits.....	.....	.....	.....	.....	.....	.....	11,356 08	11,356 08
Conduits.....	.....	.....	.....	.....	.....	.....	8,547 13	8,547 13
Posts.....	.....	.....	.....	.....	.....	.....	2,182 71	2,182 71
Teams.....	.....	.....	.....	.....	.....	.....	35 00	35 00
Superintendence	.....	.....	.....	.....	.....	.....	1,900 00	1,900 00
Total.....	$99,453 72	$83,408 68	$49,563 05	.....	$54,622 56	.....	$494,944 31	$761,932 32
*Depreciation..	3,820 40	4,170 18	2,478 15	.....	2,067 46	.....	24,747 23	37,283 42
1894.								
Jan. 1. Balance.	$95,633 32	$79,238 50	$47,084 90	.....	$52,555 10	.....	$470,197 08	$744,708 90
Grounds.....	.....	.....	.....	$30,501 84	.....	.....	.....	30,501 84
Buildings.....	.....	3 48	35 65	17,524 00	.....	.....	.....	17,563 13
Steam plant.....	.....	53 48	791 29	12,108 67	184 93	.....	.....	13,138 37
Electric plant...	.....	1,350 00	1,200 00	263 30	.....	.....	.....	2,813 30
Lamps.....	.....	.....	.....	.....	.....	.....	2,154 23	2,154 23
Circuits.....	.....	.....	.....	.....	.....	.....	7,523 39	7,523 39
Conduits.....	.....	.....	.....	.....	.....	.....	3,210 07	3,210 07
Posts.....	.....	.....	.....	.....	.....	.....	158 72	158 72
Superintendence	.....	.....	.....	.....	.....	.....	1,150 00	1,150 00
Total.....	$95,633 32	$80,645 46	$49,111 84	$60,397 81	$52,740 03	.....	$484,393 49	$822,921 95
*Depreciation...	3,629 40	4,032 01	2,455 60	1,494 80	1,973 33	.....	24,219 67	37,804 81
1895.								
Jan. 1. Balance.	$92,003 92	$76,613 45	$46,656 24	$58,903 01	$50,766 70	.....	$460,173 82	$785,117 14
Buildings.....	.....	.....	78 39	10,146 92	.....	.....	.....	10,225 31
Steam plant....	31 86	.....	6,559 16	36,666 55	.....	.....	.....	43,257 57
Electric plant...	.....	.....	.....	10,463 28	.....	.....	.....	10,463 28
Lamps.....	.....	.....	.....	.....	.....	.....	60 00	60 00
Circuits.....	.....	.....	.....	.....	.....	.....	3,509 42	3,509 42
Conduits.....	.....	.....	.....	.....	.....	.....	2,568 16	2,568 16
Posts.....	.....	.....	.....	.....	.....	.....	117 31	117 31
Superintendence	.....	.....	.....	.....	.....	.....	1,000 00	1,000 00
Total.....	$92,035 78	$76,613 45	$53,293 79	$116,179 76	$50,766 70	.....	$467,428 71	$856,318 19
*Depreciation...	3,449 51	3,830 42	2,664 69	4,283 89	1,874 67	.....	23,371 44	39,474 62
1896.								
Jan. 1. Balance.	$88,586 27	$72,783 03	$50,629 10	$111,895 87	$48,892 03	.....	$444,057 27	$816,843 57
Buildings.....	116 37	.....	.....	43 21	.....	.....	.....	159 58
Steam plant....	1,590 75	.....	.....	846 15	.....	.....	.....	2,360 90
Electric plant...	129 26	1,800 00	.....	.....	.....	.....	.....	1,929 26
Lamps.....	.....	.....	.....	.....	.....	.....	3,390 00	3,390 00
Circuits.....	.....	.....	.....	.....	.....	.....	10,625 39	10,625 39
Conduits.....	.....	.....	.....	.....	.....	.....	9,377 19	9,377 19
Posts.....	.....	.....	.....	.....	.....	.....	5,362 32	5,362 32
Teams.....	.....	.....	.....	.....	.....	.....	70 00	70 00
Superintendence	.....	.....	.....	.....	.....	.....	1,000 00	1,000 00
Total.....	$90,352 65	$74,583 03	$50,629 10	$112,785 23	$48,892 03	.....	$473,882 17	$851,124 21
*Depreciation...	3,365 36	3,728 90	2,531 46	4,114 17	1,780 93	.....	23,694 11	39,214 93
Sold	$86,987 29	.....	.....	.....	.....	.....	.....	$86,987 29
Balance forward.	.....	$70,854 13	$48,097 64	$108,671 06	$47,111 10	.....	$450,188 06	$724,921 99

* Depreciation is computed at 5 per cent., except on real estate, and is charged to operation.

Exhibit "A"—(*Continued*).

	Throop Street Plant.	Plant No. 1.	Plant No. 4.	Plant No. 6.	Plant No. 8.	R. A. Waller Plant.	General.	Total.
1897.								
Jan. 1. Balance brought forward	.....	$70,854 13	$48,097 64	$108,671 06	$47,111 10	.....	$450,188 06	$724,921 99
Buildings	.....	32 52	.....	32 20	.....	.....	.....	64 72
Steam plant	.....	391 00	.....	425 00	.....	.....	.....	816 00
Electric plant	.....	1,878 75	882 59	95 00	.....	.....	.....	2,856 34
Lamps	.....	.....	.....	.....	.....	.....	1,805 49	1,805 49
Circuits	.....	.....	.....	.....	.....	.....	13,601 44	13,601 44
Conduits	.....	.....	.....	.....	.....	.....	13,428 71	13,428 71
Posts	.....	.....	.....	.....	.....	.....	4,303 21	4,303 21
Superintendence	.....	.....	.....	.....	.....	.....	1,000 00	1,000 00
Total	.....	$73,156 40	$48,980 23	$109,223 26	$47,111 10	.....	$484,326 91	$762,797 90
*Depreciation	.....	3,657 89	2,449 01	3,936 07	1,691 88	.....	24,216 34	35,951 19
1898.								
Jan. 1. Balance	.....	$69,498 58	$46,531 22	$105,287 19	$45,419 22	.....	$460,110 57	$726,846 78
Buildings	.....	149 50	162 91	733 30	1,572 90	.....	.....	2,618 61
Steam plant	.....	458 07	132 14	4,881 18	24,810 88	.....	.....	30,282 27
Electric plant	.....	4,097 05	12 80	8,676 50	10,381 50	.....	.....	23,167 91
Incandescent plant	.....	.....	.....	411 25	.....	.....	.....	411 25
Lamps	.....	.....	.....	.....	.....	.....	19,646 01	19,646 01
Circuits	.....	.....	.....	.....	.....	.....	59,079 77	59,079 77
Conduits	.....	.....	.....	.....	.....	.....	32,769 87	32,769 87
Posts	.....	.....	.....	.....	.....	.....	17,053 09	17,053 09
Teams	.....	.....	.....	.....	.....	.....	368 88	368 88
Superintendence	.....	.....	.....	.....	.....	.....	1,000 00	1,000 00
Total	.....	$74,203 20	$46,839 13	$119,989 42	$82,184 50	.....	$590,028 19	$913,244 44
*Depreciation	.....	3,710 16	2,341 96	4,474 38	3,445 56	.....	29,501 41	43,473 47
1899.								
Jan. 1. Balance	.....	$70,493 04	$44,497 17	$115,515 04	$78,738 94	.....	$560,326 78	$869,770 97
Buildings	.....	.....	.....	859 34	5,878 95	$5,966 00	.....	12,704 31
Steam plant	.....	633 75	.....	10,118 13	9,603 05	7,467 66	.....	27,822 59
Electric plant	.....	417 25	.....	4,574 30	310 50	16,050 40	.....	21,352 45
Lamps	.....	.....	.....	.....	.....	.....	13,223 61	13,223 61
Circuits	.....	.....	.....	.....	.....	.....	43,358 58	43,358 58
Conduits	.....	.....	.....	.....	.....	.....	60,680 74	60,680 74
Posts	.....	.....	.....	.....	.....	.....	16,459 63	16,459 63
Teams	.....	.....	.....	.....	.....	.....	330 00	330 00
Superintendence	.....	.....	.....	.....	.....	.....	1,075 00	1,075 00
Total	.....	$71,544 04	$44,497 17	$131,066 81	$94,531 44	$29,484 08	$696,254 34	$1,067,377 88
*Depreciation	.....	3,577 20	2,224 86	5,028 25	4,062 90	1,474 20	34,812 72	51,180 13
1900.								
Jan. 1. Balance	.....	$67,966 84	$42,272 31	$126,038 56	$90,468 54	$28,009 88	$661,441 62	$1,016,197 75
Buildings	.....	.....	.....	1,735 49	235 00	10,429 84	.....	12,300 33
Steam plant	.....	.....	.....	6,226 43	288 00	31,710 40	.....	38,124 83
Electric plant	.....	.....	20 00	502 00	5,815 00	10,470 57	.....	16,807 57
Incandescent plant	.....	.....	.....	33 80	.....	.....	.....	33 80
Lamps	.....	.....	.....	.....	.....	.....	9,390 80	9,390 80
Circuits	.....	.....	.....	.....	.....	.....	49,846 18	49,846 18
Conduits	.....	.....	.....	.....	.....	.....	66,252 67	66,252 67
Posts	.....	.....	.....	.....	.....	.....	7,159 37	7,159 37
Crematory	.....	.....	.....	.....	.....	.....	800 00	800 00
Superintendence	.....	.....	.....	.....	.....	.....	1,675 00	1,675 00
Total	.....	$67,966 84	$42,292 31	$134,536 28	$96,606 54	$80,620 69	$796,565 64	$1,218,588 30
*Depreciation	.....	3,398 34	2,114 62	5,201 72	4,166 66	4,031 03	39,828 28	58,740 65
1901.								
Jan. 1. Balance	.....	$64,568 50	$40,177 69	$129,334 56	$92,439 88	$76,589 66	$756,737 36	$1,159,847 65

* Depreciation is computed at 5 per cent., except on real estate, and is charged to operation.

Exhibit "B"—

CHICAGO ELECTRIC

	1888.	1889.	1890.	1891.	1892.	1893.	
Maintenance—							
Buildings	$74 77	$71 06	$801 09	$674 23	$220 25	$123 51	1
Steam plant	718 61	1,543 14	2,929 71	8,360 75	3,839 39	2,960 06	2
Dynamos	49 14	413 20	885 79	3,953 98	3,990 49	2,234 89	3
Other electric equipment	305 42	131 21	206 13	02 18	118 43	71 20	4
Incandescent plant	.....	.....	.....	.....	.....	.....	5
Circuits	533 89	103 40	444 35	394 95	107 75	22 20	6
Conduits	191 16	.....	.....	.....	6 70	50 11	7
Posts	149 75	.....	18 60	2,064 06	81 17	20 70	8
Machinists	.....	.....	618 00	951 16	405 03	2,156 47	9
Bricklayers	.....	.....	.....	1,118 00	612 00	36 00	10
Carpenters	.....	.....	.....	624 75	.....	.....	11
Repair shop	.....	.....	.....	.....	1,033 08	804 02	12
Total maintenance.	$2,022 14	$2,262 01	$5,903 67	$18,210 06	$10,414 29	$8,479 16	13
Operation—Cash—							
Fuel	$3,513 81	$8,926 73	$12,837 76	$39,359 45	$30,404 83	$28,455 13	14
Oil and waste	540 27	884 29	843 63	2,006 56	2,185 78	2,071 50	15
Engineers	1,677 47	2,400 00	6,521 74	9,796 90	10,586 45	10,558 33	16
Firemen	884 60	3,724 00	9,101 09	13,896 95	13,139 28	12,663 37	17
Dynamo attendants	762 17	2,222 50	5,583 34	8,637 77	8,809 25	8,734 75	18
Trimmers	481 72	4,961 79	8,935 80	12,237 63	12,554 89	13,367 16	19
Oilers	.....	3,677 23	4,448 57	4,309 57	4,328 31	4,553 25	20
Other laborers	.....	.....	4,363 50	5,600 97	4,755 73	4,551 77	21
Sundry supplies	83 18	133 30	124 88	153 07	141 73	191 13	22
Lamps	365 58	333 91	317 76	1,907 09	1,814 67	1,081 95	23
Globes	123 79	623 62	327 60	821 86	610 00	782 25	24
Carbons	601 80	3,124 47	2,790 13	6,590 95	6,379 15	10,823 10	25
Teams	.....	.....	66 22	1,089 53	994 86	1,327 18	26
Ground rent	.....	.....	.....	.....	.....	.....	27
Office expenses (estimated)	5,225 00	5,225 00	5,225 00	5,225 00	5,225 00	5,225 00	28
General	.....	.....	3,599 57	753 76	643 70	258 10	29
Total operation	$14,259 38	$36,236 84	$65,026 59	$112,387 06	$102,573 63	$104,643 97	30
Operation—Estimated—							
Water (estimated)	.....	.....	$4,333 00	$7,727 50	$7,727 50	$7,727 50	31
Insurance (estimated)	.....	$60 00	138 00	267 00	315 00	323 00	32
Taxes (estimated)	$799 02	2,210 38	4,018 09	4,417 78	5,237 35	5,057 32	33
Depreciation, at 5% (except on real estate), see Exhibit "A"	7,838 01	19,823 83	31,986 58	37,939 87	37,864 20	37,283 42	34
Interest, at 4½%, on investment	6,701 95	18,540 13	28,939 28	34,029 36	33,964 65	33,521 91	35
Total operation (estimated charges)	15,338 98	40,634 34	69,414 95	84,381 51	85,108 70	83,903 15	36
Grand Total	$32,620 50	$79,133 19	$140,345 21	$214,978 63	$198,096 62	$197,026 28	37
Average number of lamps in operation	192	297	900	993	1,102	1,112	38
Average cost per lamp	$164 69	$266 44	$155 94	$216 50	$179 76	$177 18	39

Cost of Operation.

LIGHTING DEPARTMENT.

	1894.	1895.	1896.	1897.	1898.	1899.	1900.	TOTAL.
1	$216 86	$229 34	$948 09	$416 05	$280 01	$820 35	$656 38	$5,531 99
2	6,660 57	3,749 04	3,647 38	6,654 26	6,918 44	8,257 44	10,118 91	66,363 70
3	1,824 10	730 49	1,008 37	1,627 63	626 69	1,685 41	4,881 53	23,911 72
4	5 20	.....	16 68	54 44	61 52	107 78	6 40	1,146 59
5	.....	.....	.....	.....	16 25	26 50	17 38	60 13
6	3 34	6 90	2,717 95	669 54	2,187 94	6,890 14	5,921 68	20,003 43
7	102 30	117 16	264 91	709 64	1,638 78	3,833 74	4,436 66	11,351 16
8	208 45	.....	170 77	197 53	775 49	278 53	421 64	4,386 71
9	735 04	708 67	2,046 23	1,570 13	535 50	192 00	.....	9,918 23
10	1,158 00	1,059 00	886 50	132 00	.....	4 00	.....	5,005 50
11	538 00	688 00	268 00	651 00	.....	66 00	.....	2,835 75
12	2,418 85	4,853 72	5,594 40	2,824 35	328 51	.....	.....	17,856 93
13	$13,870 71	$12,142 32	$17,569 28	$15,506 57	$13,369 13	$22,161 91	$26,460 58	$168,371 83
14	$33,416 08	$30,681 19	$26,014 08	$29,064 32	$30,612 98	$43,324 07	$36,290 31	$402,900 74
15	2,512 53	2,931 71	2,712 20	2,605 75	2,444 02	3,313 20	3,751 46	28,802 90
16	10,000 00	10,962 87	10,844 64	10,109 74	8,463 44	8,239 65	10,722 50	111,483 73
17	11,875 11	13,033 71	13,244 25	11,301 18	11,718 07	13,926 87	19,648 10	148,156 58
18	7,111 05	6,795 00	6,120 00	5,563 52	3,238 25	3,040 60	4,985 11	71,603 31
19	13,683 29	13,876 90	14,493 89	14,039 81	16,139 27	27,892 04	36,602 25	189,266 43
20	4,385 43	4,308 00	4,438 00	4,320 00	.....	.....	.....	38,768 36
21	5,538 76	4,334 22	1,791 68	1,388 50	1,003 25	1,525 60	2,646 50	37,440 48
22	288 28	206 20	95 15	95 27	121 84	1,758 10	2,034 28	5,426 41
23	726 10	769 05	184 35	3,407 42	4,676 25	10,674 52	15,092 79	41,351 44
24	404 79	763 95	522 28	126 50	660 75	2,046 19	1,927 90	9,741 48
25	1,741 80	4,880 64	5,896 36	6,411 25	4,679 21	10,162 16	18,732 94	82,813 96
26	1,031 41	1,098 95	1,077 12	1,210 19	996 00	932 70	897 78	10,721 94
27	1,875 00	2,500 00	2,500 00	2,500 00	2,500 00	2,500 00	2,500 00	16,875 00
28	5,225 00	5,225 00	5,225 00	5,225 00	4,966 76	5,225 00	5,225 00	67,666 76
29	154 38	739 81	793 64	462 58	1,453 65	775 91	2,574 37	12,209 47
30	$100,569 01	$103,107 20	$95,952 64	$97,831 03	$93,673 74	$135,336 61	$213,631 29	$1,275,228 99
31	$77 27 50	$11,748 50	$11,773 50	$9,773 50	$14,073 50	$15,686 00	$16,027 00	$114,325 00
32	324 00	365 00	441 00	354 00	422 00	496 00	576 00	4,081 00
33	5,444 80	7,354 00	6,048 73	6,495 02	7,570 20	12,528 42	18,603 19	85,784 30
34	37,804 81	39,474 62	39,214 93	35,951 12	43,473 47	51,180 13	58,740 65	478,575 64
35	35,330 27	36,757 98	32,621 49	32,708 10	39,139 69	45,728 90	52,193 14	430,166 85
36	86,631 38	95,700 10	90,099 65	85,281 74	104,678 86	125,619 45	146,139 98	1,112,932 79
37	$401,071 10	$210,949 62	$203,621 57	$198,619 34	$211,721 73	$283,117 97	$386,231 85	$2,556,533 61
38	1,108	1,116	1,254	1,438	1,710	2,893	3,867	17,982
39	$181 47	$189 00	$162 38	$138 12	$123 81	$97 86	$99 88	$142 18

Exhibit "C"—Cost of Lighting if furnished by Private Co.

CHICAGO ELECTRIC LIGHTING DEPARTMENT.

YEAR.	NUMBER OF LAMPS.	PER LAMP.	FOR YEAR.	TO CLOSE OF YEAR.
1887	.....	.....	.....	.....
1888	192	$200 00	$38,400 00	$38,400 00
1889	297	185 00	54,945 00	93,345 00
1890	900	175 00	157,500 00	250,845 00
1891	993	175 00	173,775 00	424,620 00
1892	1,102	175 00	192,850 00	617,470 00
1893	1,112	156 25	173,750 00	791,220 00
1894	1,108	137 50	152,350 00	943,570 00
1895	1,116	137 50	153,450 00	1,097,020 00
1896	1,254	137 50	172,425 00	1,269,445 00
1897	1,438	137 50	197,725 00	1,467,170 00
1898	272	105 00	226,285 00	1,693,455 00
	1,438	137 50		
1899	1,297	105 00	355,635 00	2,049,090 00
	1,596	137 50		
1900	2,136	105 00	458,020 50	2,507,110 50
	1,731	137 50		

Exhibit "D"—Costs per Lamp and per Lamp Hour.

Table 1—Capital Cost per Lamp on Basis of Capacity.

(NOTE—The figures given below include the values of real estate occupied but not owned by the Department, but do not include value of the plant sold or of the crematory in course of construction.)

	1897.	1898.	1899.	1900.
Buildings and equipment	$295,338 54	$351,818 58	$413,697 93	$480,964 46
Real estate	114,775 24	114,775 24	117,275 24	117,275 24
Circuits	210,265 97	235,633 67	253,264 30	279,640 12
Conduits	330,592 24	363,347 61	424,028 35	486,645 72
Lamps	57,557 24	77,153 88	89,764 59	98,759 78
Posts and signs	47,115 70	51,954 42	57,845 07	58,632 18
Aerial lamps	.....	49 37	662 27	1,057 88
" circuits	6,007 41	39,719 48	65,447 43	88,917 79
" poles	789 83	13,004 20	23,573 18	29,945 44
" conduits	.....	.....	.....	3,649 80
Superintendence	15,550 00	16,550 00	18,225 00	19,900 00
Teams	241 65	810 53	940 53	940 53
Total	$1,078,233 82	$1,264,616 98	$1,464,723 89	$1,666,398 94
Estimated capacity of plants in 2,000-candle-power lamps	3,850	3,850	5,850	5,850
Cost per lamp	$280 06	$328 47	$250 38	$284 84

Table 2—Distribution of Capital Cost per Lamp.

	1897.	1898.	1899.	1900.
Buildings and equipment	$76 71	$91 40	$70 72	$82 22
Real estate	29 81	29 81	20 05	20 05
Circuits	54 61	61 20	43 29	47 80
Conduits	85 87	94 38	72 48	83 19
Lamps	14 95	20 04	15 34	16 88
Posts and signs	12 24	13 49	9 89	10 02
Aerial circuits	1 56	10 31	11 19	15 20
" poles	21	3 38	4 03	5 12
" conduits	.....	.....	.....	62
" lamps	.....	01	11	18
Superintendence	4 04	4 30	3 12	3 40
Teams	06	15	16	16
Total	$280 06	$328 47	$250 38	$284 84

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COOPER UNION

Exhibit "D"—(*Continued*).

Table 3—Distribution of Cost for Operating per Lamp, per Year.

	1897.	1898.	1899.	1900.
Maintenance and Operation—				
Coal	$20 22	$17 91	$14 97	$22 32
Oil-waste and boiler compound	1 81	1 43	1 15	97
Operating labor	32 50	23 72	18 88	19 29
Repairs to buildings and equipment	7 73	4 93	3 85	4 06
Rent	1 74	1 46	86	65
Circuits	37	1 27	2 38	1 53
Conduits	50	96	1 33	1 15
Lamps	2 37	2 73	3 69	3 90
Globes	09	39	71	50
Carbons	4 46	2 74	3 51	4 84
Posts	14	45	10	11
Teams	84	58	32	23
Repair shop	1 97	19	.....	.....
Miscellaneous	43	93	88	1 19
Office salaries	3 64	2 91	1 81	1 35
Total maintenance and operation	$78 81	$62 60	$54 44	$62 09
Estimated Charges—				
Water	$6 79	$8 23	$5 42	$4 14
Taxes	4 52	4 42	4 33	4 81
Insurance	25	25	17	15
Interest	22 74	22 89	15 81	13 50
Depreciation	25 00	25 42	17 69	15 19
Total estimated charges	$59 30	$61 21	$43 42	$37 79
Grand total	$138 11	$123 81	$97 86	$99 88

Table 4—Operating Costs per Lamp Hour.

	1897.	1898.	1899.	1900.
Cash cost of operation and maintenance	$113,337 60	$107,042 87	$157,498 52	$240,091 87
Average number lamps	1,438	1,710	2,893	3,867
Average cash cost per lamp	$78 81	$62 60	$54 44	$62 09
Average cost per lamp hour	.0222	.0152	.0135	.0160
Estimated Charges—				
Water	$9,773 50	$14,073 50	$15,686 00	$16,027 00
Taxes	6,495 02	7,570 20	12,528 42	18,603 19
Insurance	354 00	422 00	496 00	576 00
Depreciation	35,951 12	43,473 47	51,180 13	58,710 65
Interest at 4½%	32,708 10	39,139 69	45,728 90	52,193 14
Total	$85,281 74	$104,678 86	$125,619 45	$146,139 98
Average estimated charge per lamp	$59 30	$61 21	$43 42	$37 79
Average cash cost per lamp	78 81	62 60	54 44	62 09
Total cost per lamp	$138 11	$123 81	$97 86	99 88
Estimated charge per lamp hour	.0168	.0149	.0108	.0097
Cash cost per lamp hour	.0222	.0152	.0135	.0160
Total cost per lamp hour	.0390	.0301	.0243	.0257
Total number lamp hours	5,084,633	7,018,010	11,691,421	15,121,612
Average number lamp hours per lamp	3,536	4,104	4,041	3,910

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Exhibit "D"—(*Continued*).

Table 5—Statement of Coal Consumed.

Year.	Pounds.	Lamp Hours.	Average Number of Pounds per Lamp Hour.	Cost per Lamp Hour.
1897	24,256,085	5,034,633	4.7+	$0.0037+
1898	25,852,005	7,018,010	3.6+	.0043+
1899	33,046,870	11,691,424	2.9+	.0038+
1900	48,325,635	15,121,612	3.2—	.0036+

Table 6—Lamps, Lamp Hours.

Year.	Average Number Lamps.	Average Number Lamp Hours per Lamp.	Lamp Hours.
1897	1,438	3,536	5,084,633
1898	1,720	4,104	7,018,010
1899	2,893	4,041	11,691,424
1900	3,807	3,910	15,121,612

Exhibit "E"—Description and Value of Real Estate

Owned by the City and occupied by the Municipal Electric Lighting System, based on Original Cost.

Chicago Electric Lighting Department.

Power Station No. 1—1400 to 1402 Indiana avenue. * Ground owned by Water Department. Lots 27 and 28, Block 15, Assessors' subdivision of the N. W. ¼, sec. 22	$32,000 00
Power Station No. 4—98 to 106 East Chicago avenue. * Ground owned by Water Department. Lot 1, Block 2, Higgins, Law & Co.'s addition in secs. 9, 39, 14	39,000 00
Power Station No. 6—299 South Halsted street. Lots 1, 2, 37 and N. 2 2/3 feet of Lot 36, in Gurley's subdivision of that part of Block 18 lying east of Blue Island avenue in C. T. subdivision of S. E. ¼, secs. 17, 39, 14. † S. 125 feet of Block 1, lying east of Blue Island avenue, in Canal Trustees' subdivision of secs, 17, 39, 14, known as the "Morrison tract," in the event of Mr. Morrison dying intestate, reverts to the City of Chicago, as provided in the will of Mr. Morrison	30,501 84
Power Station No. 8—25 to 45 Rice street. Lot 2 of S. ½ of Block 8 in Cochrane *et al.* subdivision of W. ½, S. E. ¼, secs. 6, 39, 14; size, 300 feet on Rice street by 125 feet on———	13,273 40
R. A. Waller Power Station—6353 to 6355 Wentworth avenue. City property. Lot 9 in County Clerk's subdivision of Block 2; Skinner & Judd's subdivision in N. E. ¼ of secs. 21, 38, 14	2,500 00
Total	$117,275 24

* Ground owned by the Water Department, but charge is made to the Electric Lighting Station for the actual value at date of occupancy.

† Ground rental of $2,500 paid for this property, subject to conditions as stated.

Exhibit "F"—Estimated Equipment.

CHICAGO ELECTRIC LIGHTING DEPARTMENT.

Table 1—Conduits Constructed.

YEAR.	3-IN. VITRIFIED CLAY PIPE.	3-IN. STEEL PIPE.	2½-IN. STEEL PIPE.	2-IN. IRON PIPE.	TOTAL NUMBER OF FEET.
1887	.....	.....	.....	79,400	79,400
1888	12,109	.....	.....	129,360	141,469
1889	.....	.....	.....	189,974	189,974
1890	.....	.....	.....	101,880	101,880
1891	.....	.....	.....	48,998	48,998
1892	.....	.....	.....	24,728	24,728
1893	.....	.....	.....	10,156	10,156
1894	471	.....	.....	3,881	4,352
1895	.....	.....	.....	2,807	2,807
1896	.....	.....	.....	19,068	19,068
1897	46,638	1,505	3,105	30	51,278
1898	68,780	.....	.....	21,543	90,323
1899	.....	.....	.....	62,779	62,779
1900	82,151	.....	3,650	.....	85,801
Total	210,149	1,505	6,755	694,604	913,013

Table 2—Underground Circuits.

YEAR.	MANHOLES.	HANDHOLES.	NUMBER OF FEET.
1887	....	....	79,400
1888	42	81	184,800
1889	122	44	348,480
1890	84	....	278,960
1891	73	....	47,520
1892	43	22	26,400
1893	Dec. 9	Dec. 33	13,369
1894	8	....	3,595
1895	....	Dec. 5	10,000
1896	9	....	63,476
1897	74	....	107,694
1898	352	....	129,772
1899	306	....	78,619
1900	....	....	95,508
Total	1,104	109	1,467,593

Exhibit "F"—(*Continued*).

Table 3—Overhead Circuits.

	Poles.	Number of Feet of Wire.
1898	2,848	571,760
1899	.....	.....
1900	569	.....
Total	3,417	571,760

Table 4—Extension of the System from December 24, 1887, to December 31, 1900.

Year.	Horse-power of Engines Installed.	Estimated Capacity of Power-houses in 2,000 C. P. Lights.	No. of Arc Lights Placed in Operation.	Total up to End of Year.
1887	125	125	104	104
1888	300	300	175	279
1889	1,500	3,000	372	651
1890	425	850	278	929
1891	.....	.....	64	993
1892	.....	.....	109	1,102
1893	.....	.....	10	1,112
1894	1,000	1,000	Less 4	1,108
1895	.....	.....	8	1,116
1896	.....	.....	138	1,254
1897	.....	.....	184	1,438
1898	.....	.....	878	2,316
1899	.....	.....	1,186	3,502
1900	.....	.....	737	4,239
Total	3,350	5,275	4,239	.....

Exhibit "G"—Size, Cost and Number of Carbons and Globes, 1900.

CHICAGO ELECTRIC LIGHTING DEPARTMENT.

Carbons Received and Used in 1900.

SIZE.	RECEIVED.	USED.	
⅝ x 14	1,131,500	1,074,341	@ $12 50 per M.
½ x 12	445,000	432,825	@ 7 25 "
	1,576,500	1,507,166	

The average burning capacity of carbons was 10 hours each, for 1900.

Globes Received and Used in 1900.

KIND.	RECEIVED.	USED.	
Plain	3,860	3,752	@ $5 00 per doz.
Opal	264	163	" 6 50 "
Egg	138	61	" 75 each.
100-hour	184	148	" 8 00 per doz.
	4,446	4,124	

Exhibit "H"—Lamps in Operation December 31, 1900.

CHICAGO ELECTRIC LIGHTING DEPARTMENT.

Table 1—*Kind.*

Western Electric Boulevarde	174
" " Single Arm	407
" " Double Arm	165
" " Duplex	180
Brush	104
Brush-Adams	183
Brush-Boulevarde	384
Thompson-Houston	295
Adams-Baquall	103
Standard	825
Standard-Boulevarde	12
Fort Wayne	1,094
" " Boulevarde	104
" " 100-hour	188
Midget, 100-hour	23
Total number in operation Dec. 31, 1900	4,241

Table 2—*Average Number of Hours Lights were Burning Each Night, by Months.*

July	8½ hours.
August	9½ "
September	11½ "
October	12½ "
November	14 "
December	14 "
January	13½ "
February	12½ "
March	11 "
April	9½ "
May	8½ "
June	8½ "

Exhibit "H"—(*Continued*).

Table 3—*Location of Lamps.*

WATER DEPARTMENT—	
Chicago Ave. Water Works	23
14th St. Pumping Station	26
Harrison St. Pumping Station	17
FIRE DEPARTMENT—	
Engine Co. at 64th and Halsted Sts.	3
Engine Co. No. 29 at 35th and Halsted	1
Engine Co. No. 64 at Laflin and 63d St.	2
Hook and Ladder Co., 69th St.	2
Engine Co. No. 84, Halsted St.	1
Engine Co. No. 63, Jackson and 63d St.	2
Hook and Ladder Co. No. 16	2
Engine Co. No. 5, Jefferson St.	3
Engine Co. No. 12, Lake and Ashland	1
Engine Co. No. 17, Lake and Clinton	1
Truck Co., 19th and Johnson	1
ELECTRIC LIGHTING PLANTS—	
Halsted Street	13
Chicago Ave. and Sedgwick St.	2
Rice and Lincoln	8
R. A. Waller Plant	7
14th and Indiana Sts.	8
STREET LAMPS	3,744
Total average number in operation during 1900	3,867

Table 4—*Lamps Sent Out for Repairs During* 1900.

22	Western Electric Boulevarde Lamps		@ $5 00	each.
17	" " Single Arm	"	@ 5 00	"
23	" " Double Arm	"	@ 5 00	"
25	" " Duplex	"	@ 5 25	"
6	Brush	"	@ 5 00	"
19	Brush–Adams	"	@ 4 80	"
30	Brush–Boulevarde	"	@ 4 80	"
55	Thompson–Houston	"	@ 6 20	"
39	Standard	"	@ 4 75	"
16	" Boulevarde	"	@ 4 75	"
Total	272			
15	Frames		@ 4 75	"
106	Drums		@ 1 00	"

Exhibit "I"—Recapitulation of Machinery and Equipment.

Owned December 31, 1900.

CHICAGO ELECTRIC LIGHTING DEPARTMENT.

1. ENGINES—

1	125 H. P.	Buckeye Engine.	None of these in use at present.
4	125 "	Ideal Engines.	
1	300 "	Wright Engine.	
2	500 "	Rankin & Fritsch Engines.	
2	700 "	Elmes Engines.	
2	800 "	"	
1	800 "	Westinghouse Engine.	

2. BOILERS AND FURNACES—

1 Hawley Down Draft Extension.
5 Portland Down Draft Extension.
4 Return tubular boilers.
3 Heine safety boilers.
5 Aultman-Taylor.
3 Oil City Boiler Works.

3. STOKERS—

3 McKenzie Mechanical Stokers.
8 Roney " "

4. DYNAMOS—

5 100-light W. E. Multipolar.
24 150 " " Bipolar.
7 100 " Brush.
9 160 " "
1 Generator W. Electric.
1 50-light W. E. Dynamo (old).
1 50 " T. H. " (old).
1 50 " Armature (old).
3 Westinghouse Air Pumps.
3 100-gallon Aerial Oil Tanks.
3 100 " Underground Oil Tanks.

5. WATER PUMPS, ETC.—

3 Ide Water Pumps.
2 Blake Water Pumps.
5 Worthington Boiler Feed Pumps.
1 " outside pipe plunger pump.
1 " low duty pump for condenser.
1 " pump and receiver for taking up condensation.
1 Stillwell-Bierce Water Feed Pump.
1 Rice & Whitacre Feed Carrier for Roney Stokers.
4 Worthington Oil Pumps.

Exhibit "I"—(*Continued*).

MISCELLANEOUS—

11 marble switch-boards.
38 shaft supports, Hill Clutch Co.
1 Spencer Automatic Damper Regulator.
12 66" x 18" iron pulleys, all equipped with independent Hill Clutches.
18 72" x 18" solid hub wood rim pulleys.
1 Arnold Magnetic Clutch, attached to shaft and flywheel at R. A. W. Plant.
4 Turner Oil Filters.
1 Bristol Pressure Recording Gauge.
1 Westinghouse Alternating Dynamo for lighting City Hall.
1 New York Safety Engine.
1 75-light T. H. Dynamo for lighting Halsted Street Plant alone.
About 175' of 6" cold rolled shafting.
" 215' of 7" "
" 400' of 14" extra dynamo belt.
" 2,580' of 18" "
" 125' of 32" "
" 300' of 52" extra drive belt.
1 78" x 18" split iron pulley, wood face.
1 steam condenser.
1 Stillwell-Bierce open heater, now used as a condenser.

25 lamps of each pattern except Midget	350	lamps.
Carbons, 5/8 x 14	57,159	
" ½ x 12	12,175	
Globes, plain	108	
" opal	101	
" egg	77	
" 100-hour	36	
Lamps in operation	4,239	
Posts	1,469	
Hoods	1,492	

ECONOMIC AND SOCIAL FACTORS IN CHICAGO MUNICIPAL LIGHTING.

By John R. Commons.

The report by Messrs. Haskins and Sells shows that the total *cash* cost of the service supplied by the plant from 1888 to 1900, inclusive, was $1,443,600. But including estimated charges for water, insurance, taxes, depreciation and interest, the total cost would have been $2,556,533. Compared with the cost if the same number of lamps had been supplied by the private company at the prices charged the city for lamps, there is an apparent advantage in favor of private operation during the 13 years of $49,423, or less than 2 per cent. of the total amount. This is the extreme and only amount on the debit side of the ledger. Let us now examine the other factors to be taken into consideration, for the question of municipal or private ownership is much larger than the simple question of money cost of street lights to the taxpayer. It includes also the questions of short hours and fair wages to employees, the quality of the service, the effect on rates paid by the city and private consumers to private companies, and the corruption of the city government by private interests. These matters do not appear and cannot appear in the accounts of the department.

Benefits to Labor.

First as to hours of labor. In the city plants they are eight per day, while in the competing private plants they are (except for linemen) nine and ten per day. This is equivalent to a difference of 10 to 20 per cent. in wages, assuming the pay per day to be the same; but as the city pays higher wages per day, the difference according to time worked is in excess of 20 per cent.

The following table, derived from authentic sources, shows, as far as could be obtained, the comparative wages paid by the electric department and by the Chicago Edison Company. From this, it will be seen, that the wages per hour paid by the city range from 8.1 per cent. to 66.8 per cent. higher than those paid by the private company, and the average wages, it would appear, are probably 35 per cent. to 45 per cent. higher:

WAGES PAID BY CITY DEPARTMENT AND PRIVATE COMPANY.

Occupation.	Employer.	Hours Per Day.	Wages.			City Wages Per Hour Higher than Private Wages.
			Amount.	Period.	Per Hour.	
					Cents.	Per Cent.
Lamp trimmers	Edison Co.	10	$2 00	Day	20.0	.....
"	City	8	68 00	Month	28.3	41.5
Firemen	Edison Co.	9	2 00	Day	22.2	.....
"	City	8	65 00	Month	27.1	22.1
Engineers	Edison Co.	10	75 00 (average)	"	25.0	.....
"	City	8	100 00	"	41.7	66.8
Linemen	Edison Co.	8	2 87½	Day	36.0	.....
"	City	8	3 00	"	37.5	4.2
Laborers	Edison Co.	10	1 50	"	10.0	.....
"	City	8	2 00	"	25.0	66.6
Dynamo tenders	Edison Co.	10	2 00 to $2 25	"	20.0–22.5	.....
"	City	8	75 00	Month	31.2	39.1–56.0

The labor cost, according to the report of the city electrician in 1900, was about one-third of the total cash cost of maintenance and operation; and higher wages of 35 per cent. to 45 per cent., other things being equal, would therefore mean higher total cost of 12 per cent. or 15 per cent. to the taxpayer. If it be granted that wage-earners as well as taxpayers should gain advantages from municipal ownership, it follows that public policy cannot be restricted in its final judgment to the bare figures of cost to the taxpayer.

Public Plant Lowers Private Rates.

Take another item. The rates charged by private companies for the 100 to 500 lights furnished to the municipality have fallen from $200 per year in 1888 to $137.50 and $105 in 1900. Owing to the monopolistic character of the business, these prices bear no recognized relation to the cost of production, and consequently the prices are fixed by such personal bargaining as may happen to be appropriate to the locality. The only option which is generally practicable for the city is that of manufacturing for itself, and therefore, having its own plant, it stands in a better position for securing low rates from private companies than it would were it to depend solely on private competition. In the light of this consideration, it may possibly be true that the extreme reductions in the estimated "cost if rented" were themselves a result of the very municipal ownership with which they are compared.

This inference is supported by the fact that while a part of the public lights are contracted at $105, for all-night schedule, private consumers

pay the same company $108 for only a midnight schedule. This would be equivilent to $144 for an all-night schedule.* The Chicago Edison Company sold 18,238,000 kilowatts for both arc and incandescent lighting in its fiscal year 1897-98 at a rate of 9.112 cents per kilowatt, or about $175 for the same number of kilowatts as are yearly burned in a single Chicago street lamp.† The former chief of the city plant claimed that if Chicago were allowed by state law to sell electric light to private consumers the charge now exacted could be cut in two.§

Without going minutely into the subject or making comparisons with other cities, it is evident that the accountants' comparison of the cost of the municipal lights with the estimated "cost if rented" is entirely too favorable to the policy of "rented" lights, since the large amount of commercial lighting which is permitted to the private company but denied to the municipal plant, reduces the cost per unit and increases the profit; and since the rate charged by the private company for public lighting, where there is competition, is much lower than the rates charged for commercial lighting, where there is practically no competition.

Comparing the figures submitted by the accountants and those of the annual reports of the department of electricity, there is a close agreement, the differences being explained probably by the inclusion, by the accountants, of estimated office and general expenses. For the year 1900 the comparison is as follows:

Authority.	Number of Lamps.	Actual Cost.	Actual Cost per Lamp.
Department	3867	$231,958 33	$59 98
Accountants	3867	240,091 87	62 09

Taking the accountants' figures of "actual cost" for the entire period, it is apparent that there has been a notable reduction. The highest cost per lamp was $131.52 in 1891, and the lowest was $54.44 in 1899. The increase to $62.09 in 1900 was partly owing to the increased cost of fuel and partly to the poor condition of 203 lamps turned over to the department by the park authorities. It might be added that the department's report for 1901 shows an actual cost per

*See article on "Municipal Electric Lighting," by J. R. Commons, in December, 1897, number of Municipal Affairs.
†Bemis, *Municipal Monopolies*, p. 278.
§*Ibid.*, p. 279.

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lamp of less than $56.00. This shows that the reduction from the highest cost to the lowest cost in 13 years is over 50 per cent.

Recent Improvements.

The significant reductions occurred in the years 1897 to 1899. The explanation is found in the reorganization of the department in the middle of 1897. In the first half of that year, 65 employees were on the rolls at $4,273.31 per month. In the second half of that year there were only 45 employees at $2,941.65 per month. The net saving was $1,331.66 per month. A great deal of this economy was effected by rearrangement of machinery and by the exchange of small unit dynamos for units of larger capacity,* improvements made possible by the application of civil service reform rules. In the beginning of 1898, the department of electric lighting was taken from the direction of the fire department and was made an independent department with a single responsible head. Since 1897, all promotions have been made from men in the service. It will be noticed also that in 1898 was made the lowest contract price for rented lights, viz., $105, and yet in the three years since the civil service improvements were introduced, the total cost of the municipal lights, including estimated items, is less than the cost of rented lights.

Depreciation Charges Too Large.

When we turn from the "actual cost" to the "estimated" cost for water, insurance, taxes, depreciation and interest, we touch debatable ground. No criticism will be made upon the estimates for water and insurance, but the treatment of depreciation, interest and taxes is open to question.

It should be noted, first, that the accountants' estimates for 1899 and 1900 do not include in the "capital cost" the value of the entire plant. In 1899 203 lamps and their equipment were turned over to the city electric plant by the West Park Board. These are included in calculating the cost of operation both *in toto* and per lamp, but are not included in the capital value for 1899 and 1900. We can, therefore, take only the years 1897 and 1898 for estimation—two years when the reforms of administration had not yet shown themselves.

Noticing the items of depreciation and "capital cost" per lamp, we find that in 1897 the capital cost was $280 and in 1898 $328.47. Deducting real estate, the cost in 1897 was $250.25 per lamp, and in

Report, Department of Electricity, 1897, p. 49.

1898 it was $298.66 per lamp. This, however, does not allow for the depreciation charge which would have brought the capital cost in 1897 and 1898 to about $190 per lamp capacity. Now the leading item in this estimate is the conduits, amounting to $85.87 in 1897 and $94.34 in 1898, not allowing for depreciation.

It certainly is an exaggeration to estimate depreciation on conduits off as high as 5 per cent. a year. Such a high rate of depreciation on the entire plant may be justified when applied to an overhead plant, but not to an underground plant. By applying such a high rate on the entire plant (except real estate) for 13 years, the capital cost is brought down to $190 or $200 per lamp capacity, a figure lower by one-half than that at which the existing plant could be duplicated. The construction and maintenance accounts have been entirely adequate to cover all expenses of depreciation, and for this reason it is questionable whether the item should be given the importance here assigned. It must be noted that the accountants state that the steam and electric equipment is "in all respects modern in character," and that "the buildings are modern, of entirely fire-proof construction and in good repair." This being true, it is plain that the construction and maintenance accounts have already been charged with the depreciation account.

A depreciation charge, considered as a bookkeeping account, properly interpreted, is only a device for distributing occasional large expenditures for replacement over a period of years instead of throwing the burden on the single year when the expenditure is made. It is important mainly when the income is derived from sale of product, and the object to be attained in such a case is the maintenance of uniform prices to consumers at all times instead of extra prices during the year of extra expenditure. But in the Chicago plant the income is derived from tax-payers, and it was not considered necessary to distribute the extra expenditure for replacement over the entire period. When the time came for replacement of small-unit dynamos by large-unit dynamos and other large expenses for maintenance in the year 1898, the items were cared for simply by extra appropriations drawn from taxes. (See Exhibits A and D above.) The tax-payers of that year paid more for electric lighting on account of construction than those of preceding or subsequent years. This may have been bad policy and probably was so, as I have argued in another number of MUNICIPAL AFFAIRS (June, 1900, page 306), but whether the policy was bad or not does not affect the proposition now in hand, namely, that the *fact* of depreciation has

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actually been cared for in the construction and maintenance accounts. In other words, the expenses for depreciation were met by extra appropriations at the time when they actually occurred, whereas a depreciation fund, had it been established, would have cared for them by distributing them over a period of years. This being true, the item of depreciation, as computed as an element of cost, is a duplication and not a proper expense in the cost of operation.

Of course a depreciation charge reduces the capital on which interest is computed, and so keeps down the interest charge. This is really the only justification of such a charge, not as a "depreciation" account but as a sinking-fund account. Seeing that the construction and maintenance accounts have kept the plant up to the highest standards, the other charges should have been "interest" and a "sinking fund" adequate to pay off the principal in the usual 25 to 30 years. This would have been a sinking fund charge of say 2 or 3 per cent. instead of a depreciation charge of 5 per cent. But since a sinking fund is not a cost but a question of policy, "depreciation" would entirely disappear and the "actual cost" to the city would be only the cash cost plus taxes and interest, water and insurance.

The interest charge, however, would be increased since depreciation is not deducted and in 1898 would be $33.27 instead of $22.89 (Exhibit D), this being the interest on $739.42 per lamp operated instead of $508.69 per lamp operated, after deducting depreciation.

It must be noted that the above interest, of course, is figured upon the capital per *lamp operated* and not per *lamp capacity*. The capacity in 1898 was 3,850 lamps, representing $328.47 per lamp (Exhibit D, Table I), but the number of lamps operated was 1,710 (Exhibit D, Table 6), representing $739.42 per lamp, not deducting depreciation, and $508.64 per lamp with depreciation deducted. The fact that the capacity of the plant has been kept so far ahead of the needs of the city results in very high interest charge per lamp operated, but this is favorable to great reductions both in cost of operation and in interest charges per lamp in future years. For example, in the years 1899 and 1900 the capacity of the plant was 5,850 lamps; but the actual number of lamps operated was only 2,893 in 1899 and 3,867 in 1900. This indicates that the equipment is now far ahead of existing need, and therefore the cost per lamp, based on the actual number of lamps operated, is much higher than it will be in the next few years, until the time when the full present capacity is utilized.

Tax Estimates Too Large.

Taxes are figured on the basis of about 1 per cent. on the capital cost of the plant, and this is about the average rate in Chicago on the true value of property. But this is not a fair estimate of what the city has actually lost through municipal ownership. The private electric companies have been paying taxes on a valuation much less than the average valuation of other property. The report of the Bureau of Labor in 1894 shows that such taxes were probably only one-half of the average taxes. The accountants' estimate of $4.42 per lamp for taxes in 1898 should therefore be reduced to probably not more than $2.20, in order to show what the city has actually lost my municipal ownership in comparison with what it would have gained from taxation of a private company.

A summary of the foregoing considerations would give the following table as the estimate of the cost per lamp operated in 1898, showing a total cost of $106.55 per lamp, as against $105 and $137.50 charged by the private company and $123.81 computed by the accountants:

Maintenance and operation	$62 60
Water	8 23
Taxes	2 20
Insurance	25
Interest (1,710 lamps, $1,264,616.98)	33 27
Total	$106 55

Taking all items into account I should conclude that the accountants' statement furnishes ground for a strong vindication of the policy of municipal ownership in Chicago. It shows, first, that where a great city is intrusted with responsibility, it is able in due time through self-government to introduce administrative reforms necessary to eliminate politics and to place the undertaking on a business basis. It shows that wage-earners can expect through municipal ownership to share in industrial progress as well as taxpayers. It shows that even with high wages and short hours and without the support of profits from commercial lighting, a municipal plant can furnish street lighting at a lower cost to the taxpayers than the cost of contract lighting, provided the people are aroused to the need of civil service and administrative reform, and that this stage has been reached in Chicago.

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MILAN STREET RAILWAYS.

By Effren Magrini.

Milan is one of the most populous and important industrial centers of Italy. According to the last census of February 10th, 1901, its population numbered about 500,000. Its revenues are larger than those of any other city except Rome.

The first, and until recently, the only municipal street railways in Italy were those of Milan. The city does not operate the lines, but owns the tracks which are leased to a private company. The system is the most extended in all Italy and one of the largest in Europe. It is electrically equipped with a total length of 76.5 kilometers (47.5 miles), but part of it is double track, making 100 kilometers (nearly 70 miles) of trackage.

Electricity Introduced.

A horse car system was operated in Milan for many years by the *Società Anonima degli Omnibus.* When the franchise was about to expire, the municipality decided not to renew it, but instead to investigate the question of municipal operation. At the same time—November 30, 1892—the city council sanctioned a contract between the municipal executive board and the *Società Generale Italiana di elettricità sistema Edison,* giving the latter power to experiment for one year with an electric line to be constructed by the company, but reserving the right to refuse the extension of this privilege.

The Società Generale built a power house and on Nov. 2, 1893, the first line 2,145 meters long between the *Piazza del Duomo* (Cathedral Square) and the *Stazione Nord* (Northern Railway Depot) was opened. A branch line was later constructed leading to the grounds of the Exposition which was opened during the following year. The experiment was highly successful in every way, and at the

expiration of the stipulated period, the municipal executive board granted a franchise to the *Società Generale* for all the city lines, but on terms altogether different from those applied in other cases.

Reasons for Municipal Ownership.

The general rule in granting similar franchises has been to permit the private company to own the track as well as the operating plant, the city receiving an annual compensation for the use of the street. The municipality of Milan, however, did not regard this plan as advantageous to the public interests and stated its reasons in a report dated June, 1895.

The objections to the provisions of the customary concessions so the report stated are two fold: first, those due to the character of the industry, second those from the point of view of public interest. The maintenance of the track requires continuous repair and other work which requires more or less tearing up of the treets. Work of similar character is being done by the water and electric light companies. As a rule, all this work is so executed as to involve the least possible outlay to the companies and yet just to satisfy public requirements. It is, therefore, better that all this work be entrusted to the municipality itself, which more than any other body can be relied upon to perform it in accordance with public interests. It was because of these considerations that the municipality reserved to itself the ownership of the track and accepted the obligation of maintaining and repairing the streets.

Aside from these factors there was another. Any private corporation holding a franchise aims primarily to derive the largest possible profits. In order to do this it seldom reduces fares, often abolishes those lines which are little profitable, refuses to construct new lines until the traffic will pay, restricts the service as much as possible, etc.—all contrary to the public interest. Hence, it is very necessary for the city to impose conditions and stipulations protecting its citizens.

Another objection to unrestricted private control relates to progress, the rapidity with which new inventions are adopted. Private corporations introduce as few inventions as possible, until they become very necessary and even unavoidable, for every innovation results in an increased outlay. It may also give rise to numerous conflicts with the municipal authorities, because the interests of the public demand the latest improvements.

XUM

Provisions of the Franchise.

For these reasons the municipality of Milan decided to own the tracks and to lease them to a private company. A provisional contract to this effect was entered into between the municipal executive board and the *Società Generale Italiana di elettricità sistema Edison,* January 15, 1895. In its sessions of July 12 and 23, 1895, the municipal council authorized the executive council to execute a final agreement, to date from January 1, 1897. On October 29, 1895, this agreement was confirmed, followed by the ordinances of December 31, 1896, November 14, 1898, and March 13, 1899, modifying its provisions in minor matters.

In brief the agreement provides that the city shall construct and maintain the road-bed, pave and repair the streets, and leave the operation of the road to the private company which must provide adequate equipment. The city has large powers to regulate the character of the service, the kind and number of cars, hours of running, extent of lines, reduction of fares, method of traction, etc. Of the gross receipts the private company receives a certain specified amount for each car-kilometer and 40 per cent. of the net revenue, which is obtained by deducting from the gross revenue the compensation due the company and 4,500 lire ($900) per kilometer of single track which the city retains, the remaining 60 per cent. belonging also to the city. After the expiration of the first 10 years the city may take over the road upon paying a proper compensation, and either operate it itself or lease it to another company. The agreement also specifies in detail the amount of wages to be paid, the hours of labor, the amount of old age pensions and insurance funds. The duration of the contract is 20 years from January 1, 1897.

An abbreviated translation of the contract follows:

(Article 1.) The municipality at its own expense constructs, repairs and maintains the tracks, reserving to itself complete control over them.

(2.) The *Società Generale* must operate by electrical power all tracks which have been constructed, or will be during the next fifteen years, at its own expense, furnishing all rolling stock, power-houses and other equipment.

(5.) All plans must be submitted prior to execution to the municipal executive board, which has the power to make such changes and modifications as it deems necessary and proper.

(6.) The board reserves to itself the power to compel at the expense of the private company the introduction of such changes in the construction of passenger cars as it deems necessary or convenient in the interests of the passengers.

(7, 8, 9.) The hours of daily service, the number of trips, the minimum number of cars, the normal daily run of each car, are specified in detail. In case the gross

receipts of the company fall below a certain minimum (18,000 lire per kilometer per year), the municipal board may diminish the number of trips or the hours of service without giving the company any claims because of decreased revenue.

(10.) The municipal board may suspend for any period it considers wise the operation of any line, and in such cases the company shall have no claim for compensation or indemnity.

(12, 13, 14.) These articles fix the prices of tickets, regulate transfers, and provide for the gratuitous transportation of inspectors and other municipal officers. The municipal board is given the power to reduce fares during two hours of each day from 10 to 5 centesimi (2c. to 1c.) on all or certain lines.

(15 and 16.) The total receipts belong to the city, from which the company receives the following compensation: (a) .255 lire for each kilometer traversed by each motor car put into service between January 1, 1897, and December 31, 1901; .270 lire per kilometer per car for such cars as are added between January 1, 1902, and December 31, 1906; and .285 lire per kilometer for each car that is added between January 1, 1907, and December 31, 1912. The rate of compensation for other cars is uniform, to wit, .130 lire per kilometer per car. (b) 40 per cent. of the net revenue, which is obtained by deducting from the gross revenue the compensation due the company as above, and 4,500 lire per kilometer of single track (being city property) used by the company, even in case the use of the track be shared by another concern.

(18.) The municipal board has the power of operating, or causing to be operated, other lines with any traction that it selects, even using the same track as used by the contracting company, provided such operation does not interfere with the *Società Generale;* in case it should interfere, an equitable compensation must be paid to the company. Similarly the city may use the tracks for any municipal purpose.

(20.) The municipal technical officials have surveillance over all the work of installation and maintenance performed by the company.

(23.) The offices of the company shall be located within the territory governed by the city council.

(24.) Between July 1, 1916, and June 30, 1917, the municipal executive board may order the reduction of the number of cars operated, the abandonment of certain lines, the removal of all of its property from the streets, and the restoration of the street surface and house fronts to their original condition. By June 30, 1917, the *Società Generale* may be ordered to hand over its fixed stock to another company. In the latter case the city must, however, prior to June 30, 1916, give notice of its intention to purchase the fixed material and to hand it over to another company.

(27.) The maximum length of the working day for all employes is fixed as 10 hours, divided into periods not exceeding 6 hours each. Four days of rest during each month must be granted to each employe.

(28.) The minimum wages of the conductors and motormen are fixed at 30 centesimi (6c.) per hour net (free from taxation), the minimum daily wage to be 3 lire (60c.) for each day of actual work.

(29.) An insurance fund for assistance in case of death, permanent disability, sickness not caused by accident while at work, and leaving the service after 5 years of labor, is to be made up in the following manner: (a) The *Società Generale* contributes 1 centesimo for each hour of labor of every employe. (b) The municipality contributes 3 per cent. of its share of the net annual revenue, but in no case

less than 12,000 lire. (c) Contributions from the employes themselves are to be determined by special rules, and all fines imposed by the company are to be turned into this fund, as well as gifts from outsiders.

Further, the company is to insure at its own expense its employes against accidents. Unless more advantageous indemnities be provided by law, the following amounts are to be assured: (a) In case of death, an amount equal to 1,000 times the daily wage. (b) In case of accident resulting in incapacity to work, an amount varying from 120 to 1,200 times the daily wage, depending upon the degree of incapacity. (c) In case of temporary disability, a daily indemnity equal to 9/10 of the daily wage.

(32.)The *Società Generale* is forbidden to transfer its lease, or to merge with another corporation, without the consent of the municipal board.

(33.) The municipality may end the contract in case (a) the company fails within 20 days after notice to deposit the required amount to secure the performance of its obligations; (b) the company suspends, even partially, the operation of the lines for a period exceeding 8 days, except when due to "acts of God or the King's enemy"; (c) repeated and justified complaints are filed regarding the service, which are due to the fault of the company or its employes; (d) the company dissolves or fails; (e) the company violates provisions contained in Article 32.

(36.) The company agrees to deposit 500,000 lire to assure the faithful performance of the contract; half of this sum is to be returned three months after the opening of the lines.

(38.) Power is reserved to the municipal board to redeem at any time after the expiration of the first 10 years the right of operation, by paying to the company an amount to be determined by three experts appointed by the judicial authorities in case the parties themselves cannot agree. The city may take over at the same time all the rolling stock and equipment, including the generating plant, barns, etc.

(39.) If, owing to the progress of science and inventions, the cost of electric traction shall be diminished, the municipal board shall have power to reduce the compensation per car-kilometer in accordance with the actual cost, which is to be determined by three experts, as provided in Article 38. If a better system of electric traction should be adopted elsewhere, or a new system of traction invented, the municipal board may order its adoption in whole or in part.

(Article 40.) The duration of this contract is 20 years from January 1, 1897.

Results of Operation.

The development of the electric street railways in Milan was rapid. By the end of 1897 there were 6,038 meters of electric line; by the end of 1898, 19,051 meters, and animal traction has now disappeared entirely. The present system contains, as stated above, about 100 kilometers of track. Over these lines circulate from 206 to 240 motor cars and 30 trailers. In the power house of *Santa Radegonda* are installed four great rotary transformators having a total horse power of 2720 and an accumulation battery capable of furnishing 3,500 ampere hours. The system of distribution adopted is the trolley system with a voltage of 500. Each car has a motor of 25 horse power. The plans of motor cars and trailers have to be submitted

for approval to the municipal executive board which has reserved the right to compel the company to introduce, even during the franchise period, at its own expense all modifications which it may regard advisable for the convenience and safety of the travelling public. The motor cars contain 40 seats and the trailers must not have more than 50.

According to Article 8 of the agreement, the motor cars are to cover not less than 100 and not more than 200 kilometers, so that the mean number of kilometers covered by the cars during a normal period of operation is not to fall below an average of 150 calculated for a yearly period. The normal hours of operation are fixed by the franchise as follows:

From Nov. 1 to Feb. 28	7	A. M. to 12 P. M.
From March 1 to Apr. 30	6.30	A. M. to 12 P. M.
From May 1 to Aug. 31	6	A. M. to 12 P. M.
From Sept. 1 to Oct. 31	6.30	A. M. to 12 P. M.

The tickets issued are of three classes:

(1) Ordinary tickets. The price is 10 centesimi (2 cents) for a single fare. During the hours when the workmen go to and from work, the price is 5 centisimi.

(2) Change tickets at the price of 10 centesimi, entitling the holder to a ride over two lines, but not on the same line in two different directions.

(3) Gratuitous transfer tickets.

The number of passengers for the year 1898 was 44,559,888. The only days in that year when traffic was suspended were Feb. 20 and May 8, 9 and 10 by reason of the well-known riots which happened in Milan as well as many other Italian cities. In 1899 the number of passengers had risen to 57,385,737—an increase of over 25 per cent. In 1900 it still further advanced to 64,485,356—a 12 per cent. increase.

Statistics.

The following statistics for 1899 and 1900 throw much light upon the results attained under the agreement:

	1899.	1900.
Kilometers traversed by all cars	11,472,328	12,208,113
Tickets sold:		
5 centesimi (1c.)	8,888,085	12,335,075
10 centesimi (2c.)	43,292,376	46,035,257
Tickets over two lines	2,937,148	3,475,131
Transfer tickets	2,268,128	2,639,893
	57,385,737	64,485,356

Receipts:		
From tickets.....(Lire)	5,051,781	5,551,168
Sundry receipts.....(Lire)	16,044	16,056
Total receipts.....(Lire)	5,067,825	5,567,224
Average daily receipts.....(Lire)	13,844	15,253
Average receipts per car-kilometer.....(Lire)	.44	.45
Payments:		
To private company per car-kilometer, at the rate of .255 lire per motor car.....(Lire)	2,870,497	3,018,989
To private company per car-kilometer, at the rate of .130 lire per trailer.....(Lire)	28,012	47,962
To the city, at the rate of 4,500 lire per kilometer .....(Lire)	440,530	441,757
Total payments.....(Lire)	3,339,039	3,508,708
Net receipts.....(Lire)	1,728,786	2,058,516
To the city, 60%.....(Lire)	1,037,271	1,235,109
To the Società Generale, 40%.....(Lire)	691,514	823,406
City receives, therefore:		
For the use of the track.....(Lire)	440,530	441,757
As its share of the profits.....(Lire)	1,037,271	1,235,109
Total .....(Lire)	1,477,801	1,676,866
Per day .....(Lire)	4.949	4.594
Kind of tickets purchased:		
5 centesimi.....	15.48%	19.15%
10 centesimi.....	75.44%	71.38%
Change tickets.....	5.12%	5.39%
Transfer tickets.....	3.96%	4.08%

The number of "pass tickets" used for the service of the city and the company were 311,521 in 1899 and 332,494 in 1900, representing a nominal value of 15,576 lire or 0.31 per cent. of the receipts for 1899, and 16,625 lire or 0.30 per cent. of the receipts for 1900.

The total cost per passenger, including transportation proper charged by the city for use of rails, and profits of the company was (L 2,898,508 + 440,530 + 691,514 ÷ 57,385,737) L 0.0702 (7 centesimi) for 1899, and (L 3,066,951 + 441,757 + 823,406 ÷ L 64,485,356) L 0.0670 (6.7 centesimi) for 1900.

Municipalization a Success.

The financial results under this arrangement have been more favorable than was anticipated, for the reason that the number of passengers increased considerably and the actual expenditures proved lower than calculated. The municipal board, after the new rails were

laid and the old lines adapted to electrical traction, reported a total outlay of 3,217,984 lire. The city receives 4,500 lire per kilometer, amounting to 441,757 lire in 1900. As this is 12 per cent. on 3,680,000 lire—a sum sufficiently large to include every possible expenditure—it is evident that the city is receiving a very generous rental, for after paying interest, say of 4 per cent. it would still have 8 per cent. to put into a sinking fund. At this rate the system could be replaced every ten or twelve years.

But this is not all. The city received 1,235,109 lire in 1900 as its share of the net receipts, which is clear profit. It represents nearly the annual value of the franchise and suggests to American readers some very interesting comparisons. This sum of 1,235,109 lire is over 20 per cent. of the gross receipts. New York companies say that 5 or 8 per cent. is an unjust burden and even object to paying the tax on some $70,000,000 of franchises that have been *given* to them. And as this is but the beginning of electrical traction, the profit will doubtless steadily increase in amount and in proportion.

The total revenues received by the city of Milan from its street car service have been as follows:

	Lire.		Lire.
1887.....	235,580	1895.....	312,792
1888.....	249,675	1896.....	330,238
1889.....	262,696	**Under new agreement:**	
1890.....	260,145	1897.....	963,237
1891.....	258,291	1898.....	890,536
1892.....	260,607	1899.....	1,037,271
1893.....	271,325	1900.....	1,235,109
1894.....	308,155		

From what has been said it is seen that Milan's experiment of municipalizing its tramways is of great importance and value to persons interested in municipal affairs. While the plan followed removes the inconvenience of a private corporation owning and operating the street railway system, it does not cause the other inconveniences to which complete municipalization may give rise.

Some other Italian municipalities are now studying this question and many important cases of municipalization are likely to take place at the expiration of the franchises now in force.

MASSACHUSETTS FRANCHISE TAX.

Local Distribution.

By Frederick A. Wood.

The Massachusetts system of taxing domestic corporations may be outlined in a few words. The permanent state tax commissioner is given large resources for ascertaining the total value of the property and franchise of each corporation. The local assessors and the officers of the companies must make returns to his office, and he has authority to examine books. The main objective is to get the market value of the stock issue. This is regarded as the true worth of the property and franchise. Real estate and machinery are taxed locally at the valuations determined by the assessors. From the true worth of the whole property and franchise the following deductions are made: In the case of interstate railway and telegraph companies, the value of the real estate and machinery in Massachusetts and such portion of the whole valuation as is proportional to the length of that part of the line lying without the state; in the case of telephone companies, so much of the whole valuation as is proportional to the number of telephones used or controlled by them without the state, as well as the value of all stock in other corporations held by them on which taxes have been paid; in the case of insurance companies, the value of mortgages on real estate held by them subject to local taxation, and, in the case of all other corporations, the value of the real estate and machinery which is taxed within or without the state. These deductions from the total worth of the corporations leave the valuations on which the franchise tax, or the tax on "corporate excess," is levied. The rate fixed for this tax is the average rate of property taxation.

The financial officers of the corporations pay their assessments to the state treasurer, who retains for state use the proportion of the assessment on each company which corresponds to the number of stockholders who live without the state, while to each town and city is sent the proportion which corresponds to the number of stockholders living in that town or city. Thus the tax is regarded as one on personal property, to be met really by the owners of the shares, although the corporations make the payments. It should be said that the corporation tax law does not apply to banks, savings banks and certain kinds of insurance companies, for which special methods of taxation are provided, and that the rule regarding distribution of receipts has been changed in the case of street railways.

CRITICISM OF PRESENT SYSTEM.

Upon the whole, the system appears to be acceptable to the people of the state, except as to the manner in which the revenue is locally distributed. This works a measure of injustice between different classes of communities. The Commission of 1897 pointed out this defect, showing that in 1896, 18 towns

received of the proceeds of the tax on corporate excess five times as much per capita as the average for the state. More specifically, the amount of this tax distributed to all the cities and towns of the state was $1.03 per capita, that distributed to 32 cities was $1.08 per capita, that going to all the towns was 93 cents per capita, that allotted to 18 towns was $5.31 per capita, while that belonging to 303 towns was 59 cents per capita.

Substantially the same relative difference in local receipts exists to-day. The 18 towns, of course, are those in which the large stockholders of Massachusetts corporations have their residence. These places are sometimes denominated "tax-dodging towns." In them the rates are much lower than elsewhere. The following classification of cities and towns as to the rate for each $1,000 in 1901 illustrates this feature of local taxation in Massachusetts: In 17 towns the rate ranged from $5.80 to $9.80; in 2 cities and 110 towns, from $10 to $14.90; in 29 cities and 156 towns, from $15 to $19.80; in 2 cities and 34 towns, from $20 to $24, while the lowest rate was $5.18 and the highest $25. The massing of large holders of bonds and of shares in foreign companies in the first group of towns makes low rates possible even if only a small part of such property is returned to the assessors. The distribution of the tax on the corporate excess of domestic corporations according to the residence of shareholders is a further advantage to the finances of these towns. The property from which a tax is derived may be many miles distant from the town which receives a goodly sum because several heavy stockholders live therein. If no large holdings of stock belong to the residents of the town in which the plant of the corporation is located, that town gets very little from the tax on franchises.

STATE TAXATION SUGGESTED.

The special commission sought to remedy this anomalous situation by proposing that the state should retain not only that portion of the tax on corporate excess which corresponds to the holdings of stock by persons not living within the state, but also that portion which is now distributed to the cities and towns. To compensate the latter for the loss of revenue resulting from this change, it was suggested that the state assume the expenses of the counties, which are now met by taxes on general property and polls. The total of the franchise tax that is distributed to the cities and towns approximates roughly the expenses of the counties, and but a slight disturbance of local finances in the aggregate consequently would have resulted from the adoption of the commission's plan. On the other hand, the burden of taxation of the different classes of cities and towns would have been equalized and considerable relief would have been given the farming communities.

The Legislature, however, did not look with approval either upon this particular recommendation or upon the commission's scheme of tax reform as a whole. It was not altogether indifferent to the demand for a change in the manner of distributing the tax on corporate excess, but it listened to a suggestion whose consequences seem not unlikely to be of even greater significance than would be the retention by the state of the entire tax.

APPORTIONMENT OF STREET RAILWAY TAXES.

The report of the special street railway commission which was making its investigations at the same time with those of the tax commission discussed various phases of the street railway problem and recommended, among other things, that

changes be made in the taxation of the companies. These changes, in addition to two new forms of taxes—one calling for the payment to the state of the excess in dividends over 8 per cent. by companies which had declared average dividends of 6 per cent. and the other imposing an excise upon gross receipts for the benefit of cities and towns through which the lines of the companies pass—involved distribution of the corporate excess derived from the general corporation tax on the basis of trackage. These three proposals in regard to the taxes on street railways were adopted by the legislature of 1898.

Without discussing the wisdom of placing upon the street railway companies extra taxes to which there are no corresponding imposts upon other forms of corporation activity, or whether similar special methods of taxation should be extended so as to embrace all public-service corporations, I desire to emphasize the importance of the new law in respect to the distribution of the levies upon corporate excess—or franchise tax. Before 1898 the proceeds from this tax, aside from that credited to foreign stockholders, went to the cities and towns where the Massachusetts stockholders live. Since then the distribution has been in proportion to trackage—a distinct change in concept. The corporations are considered as units, and not the shareholders as individuals. Accordingly the revenue is scattered to the communities whose population and industries have provided the fund from which it has been paid.

This change in the rule of distribution can hardly fail, it would seem, to result in the adoption of a similar rule for at least certain kinds of corporations engaged in other work than that of operating street railways. If the idea is sound in respect to street railways, it is difficult to see why it is not also sound if applied to steam railways, to electricity and gas companies, to manufacturing and trading companies. It is obvious, however, that the distribution of the tax on corporate excess without reference to the residence of stockholders will be by no means a simple problem. The choice of trackage as a standard for division between cities and towns was natural in the case of street railways, but if the entire tax upon corporate excess is to be distributed on a new plan, that plan should rest upon some more fundamental idea than trackage by itself implies.

SOLUTION SUGGESTED.

Is there then any theory so inclusive that it may properly be used as a substitute for distribution according to the residence of shareholders? It seems to the writer that it may be deduced from the resolution adopted last year at the National Conference on Tax Reform in Buffalo. That resolution in part was as follows: "That this conference recommends to the states the recognition and enforcement of the principles of interstate comity in taxation. These principles require that the same property should not be taxed at the same time by two state jurisdictions, and to this end that, if the title deeds or other paper evidences of the ownership of property or of an interest in property are taxed, they shall be taxed at the situs of the property, and not elsewhere."

It will be observed that the idea of this resolution, which refers in part to the vexed and vexing matter of double taxation through the attempt of a state to tax the securities which its residents own in foreign corporations, is that the tax is due to the state in which the property is found. It is a refinement of this idea to say that, as between the cities and towns of a particular state, whatever taxes are paid by a corporation should go to that community in which its plant rests

and its business is done. The corporation is the taxpayer; its taxable situs is where its business is carried on.

This would appear to be a workable theory on which might be based the distribution of the tax on the corporate excess of all Massachusetts corporations. Surely the distribution of the receipts from the street railway companies by the rule of trackage conforms to it, since trackage must be regarded merely as a rough index of the location of the companies' physical property and fields of economic activity. Perhaps, too, it is possible to find similar indices of the distribution of the property and business of corporations engaged in some other kinds of enterprise, although such indices in most instances will present difficulties which trackage does not.

ATTENDING RESULTS.

First, however, it would be necessary to determine in what unit of territory the business of a corporation or a class of corporations belongs. Steam railways, for example, should be regarded as industries whose field of exploitation is the entire state; no smaller territorial division could be chosen, since the business of such companies ramify in all directions. Consequently, the whole tax upon steam railway companies, if the suggested principle is to obtain, should be covered into the state treasury. This would mean no more than that the Massachusetts practice in regard to taxes on savings banks and mutual insurance companies had been extended to steam railways. Telegraph companies also would be held to operate in a state-wide field.

Nearly every other form of corporate activity to which the general law applies, on the other hand, might reasonably be regarded as essentially local, and the tax on corporate excess could logically be divided among the cities and towns on the basis of somewhat arbitrary indices or of valuations of the physical property itself. Numerous companies are located in but one city or town, and there would be no problem in distribution with them. But for corporations whose enterprise crosses the lines of local demarcation definite rules, varying with the different kinds of business, would be needed. The number of instruments in each place might serve as an index with telephone companies, and the extent of wires and pipes might answer for electric and gas companies. Manufacturing and trading companies doing business in more than one city or town would present more complications and indices probably would have to be abandoned, so far as they are concerned. Should the distribution be in proportion to the valuations of real estate and machinery which the tax commissioner uses in finding the corporate excess, it would hardly be contended that the allotment would not be essentially just.

No statistical investigation is necessary to show that purely residential communities would suffer a loss of revenue and that the centres of manufacturing and general business activity would gain in income, as a rule. Boston would be benefited through the large trading companies, stockholders in which live elsewhere in great part. Certain manufacturing cities, like Lawrence and Lowell, which are put to heavy expense for street improvement and for the provision of school facilities for populations composed of mill workers and others of moderate means, also would receive considerable additions to their incomes. On the other hand, many places probably would be but slightly affected one way or the other. The retention by the state of the entire tax upon steam railway and telegraph companies could hardly be a serious matter to any city or town, while the gain to the state treasury would be large and would correspondingly lessen the state tax on general property.

XUM

One important incidental effect would be to make the assessors in some of the mill cities less insistent upon high valuations on machinery, whose true value it is always difficult to determine and the exemption of which from all taxation may yet seem the wise policy of the commonwealth. The competition of Southern cotton mills with those of New England is one factor which has directed attention in Massachusetts to the taxation of machinery. In two cities of the commonwealth, Holyoke and Lowell, vigorous protests against the valuations of such property fixed by the assessors have been made in the courts. As the law is to-day, and with municipal expenses as they are, these officials have every inducement to find high valuations for machinery, since the tax on the value of the stock issue of a corporation over and above the value of the real estate and machinery goes largely to non-resident stockholders.

The change as to corporate excess which the departure in reference to street railways seems to suggest as logical—and it should be said that this departure also implies a change in the distribution of the bank tax—may not take the form outlined above. It is possible, indeed, that the simplicity of distribution in proportion to population may commend that method to the public. It is possible again that the plan of the Commission of 1897 for turning all receipts from corporate excess into the state treasury may yet seem the wiser course. But it is a warrantable contention that in disposing of this fund some consistent theory must be followed, and that the law as it now stands is, in respect to distribution, in a period of transition. Allotment on the basis of local holdings of shares has been given up in one field, but no substitute for that basis which is of general applicability has taken its place in the policy of the Legislature.

COPY

VEXATIONS OF CITY PEDESTRIANS.

By Louis Windmuller.

The necessity to the human body of open-air exercise is not appreciated by municipal authorities, although one-third of our population dwells in the sultry homes of cities, where it is compelled to remain all the year. If these persons could, at their ease, take daily a short walk between their habitation and workshop, it would suffice for recreation. Instead of being enhanced by smooth and shady roads the comfort of pedestrians is constantly disturbed, and their limited privileges are more and more encroached upon. For example, the promenade over the Brooklyn bridge, which offers the finest view of city, harbor and bay, has been narrowed to make room for tracks of trolleys whose weight endangers the structure. The Lafayette boulevard, commanding from high bluffs, vistas of the noble Hudson with the Palisades of New Jersey in the background is used by carriages and nothing has been done to make walks along the sides comfortable; yet they are shaded by virgin forest trees and could with small expense be made attractive. An ambitious politician lately submitted a plan to cut from the sidewalks of Fifth avenue, the only street in New York where fashion predominates, sixteen feet to make room for more vehicles. If he had ever tried to pass ladies who elbow each other to reach bargain counters, he would not have attempted a scheme which opulent householders, whose mansions on that thoroughfare are doomed to become warehouses, hastened to veto.

Of noises which bewilder city visitors, few are more aggravating than rattling cart wheels and clattering hoofs on hard stone pavements. They compel passers to shout when they converse. Approaches to ferries and bridges are disturbed by voices of news vendors and cab drivers whose clamor invades every nook and corner creating an atmosphere of constant excitement. I was persecuted by the former as I passed by a lonesome line of warehouses during the Spanish war, until I purchased his small stock of "extras" to silence him. Before I could get rid of them the fellow burst upon me again with a fresh supply followed by a half dozen equally vociferous rivals.

Structures covered with ivy and parkways shaded by foliage are naturally attractive. Their enjoyment is not as frequently disturbed here as it is in the vaunted cities of Continental Europe by the sight of crippled beggars. But our city pedestrians suffer from divers other annoyances that could be abated. Passing a row of brown stone houses they encounter servants who scatter dust over their clothes from the stoops they sweep, or into the eyes from the mats they shake. The air in streets controlled by retailers is polluted by the inconsiderate cleansing of shops and sidewalks. Ashes are dispersed when thrown by reckless collectors into their gathering carts. In Europe such work is done before daybreak, and water is sprinkled to lay the dust. Our scavengers are often careless and take

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no pains to prevent dust; they place the sweepings along walks in small heaps, which are apt to dry and disperse before removal. The greatest nuisance is to be found in Chicago, where the soot of bituminous coal darkens the air. In St. Louis, which is not much better, anti-smoke ordinances and anthracite coal have become popular; in anticipation of the World's Fair, they are cleaning house.

Another impediment is accentuated in Chicago. When first I visited the "Windy City," after the panic of 1857, it was gradually being raised above the level of Lake Michigan. Some houses had been elevated in every block, others remained on the old plane. When walking one had to climb up and down flights of stairs in every block. The grades of thoroughfares again were changed after the fire of 1871; the inhabitants seem to have grown fond of this exercise, or they would not have raised their curbstones so much above street levels.

American cities never grow old; the man who is addicted to climbing finds in their busy streets all the opportunities he wants. Every building, after an average existence of twenty years, is demolished to make room for a more modern and more suitable structure. Where new edifices are erected and pavements torn up for underground improvements, the pedestrian is compelled to climb.

Streets in districts devoted to wholesale business, often contrary to law, are encumbered with merchandise particularly while it is being loaded and unloaded. Alley ways should be provided for this purpose as in Philadelphia. Obnoxious pushcarts of hucksters block some of the busiest streets, especially on Fridays and Saturdays when Jews and Gentiles buy supplies for the following holidays.

In city walks one is reminded of early struggles for existence—somebody is sure to get ahead and impede your progress. The unwritten law to go on the right side enforced by the police in Europe, is disregarded and adds greatly to the difficulty of locomotion.

Newspaper bulletins on sidewalks increase the number of obstructionists. Disregarding the existence of passers, factory girls on leaving their shops often barricade corners. In the neighborhood of the Stock Exchange in New York, the Board of Trade in Chicago and other centres of business activity, a promenader is apt to be hustled. Eager men, anxious to reach their exciting field of action, are inclined to push aside any man who obstructs their way. The Boulevards of Paris are in strange contrast with such tumult. Nobody conceives that anybody can have a desire to hurry. Whoever will not adapt himself to the liesurely gait of blissful saunterers can only escape by jumping into a *fiacre*.

Of dangers which threaten pedestrians, automobiles and bicycles are among the most serious. Ordinances which restrict their speed to eight miles an hour in cities are seldom heeded. The most flagrant violations rarely are punished with adequate severity. Gliding noiselessly and swiftly over smooth pavements, these vehicles are apt to run down the unfortunate who may cross their paths. In turning corners they seldom reduce speed to the rate ordained by law. Frequently they collide before they can signal their approach. The cyclist on such occasions is apt to suffer with the pedestrian and consequently is more careful than the chauffeur, who relies on the superior strength of his vehicle. Of horseless carriages driven at reckless speed, the greatest number circulate in suburbs of French cities. The driver of one who had made a run of some hundred kilometres an hour in a race near Paris, when recently called upon to explain some accidents laid to his charge, could remember the jolting of his wheels, "but had no time to stop for investigation!" The impudence of autoists made the London police desperate until they discovered an old ordinance which limited the speed of vehicles

in city streets to three miles an hour. Everyone had to be announced by a footman swinging a flag a hundred feet ahead. When customary British conscientiousness enforced this rule, the automobiles disappeared.

While they remain expensive, the use of these vehicles is naturally confined to the few who can indulge in the luxury. But a widely felt popular demand for them, stimulated by the desire to go with little effort as fast as possible, will increase production and improve quality. Increasing sales will reduce cost, until a fair mobile may be had for the price of a good cycle. When their use becomes universal they will be more dangerous than trolleys, which are confined to their tracks. Notwithstanding innumerable laws to prevent them, casualties are of daily occurrence; it will be difficult to restrain autos from killing pedestrians, from destroying the slower vehicles, and from injuring each other when thousands race at the rate of forty miles an hour over the common highways. They should then be restricted to inclosed roads of their own, as locomotives very properly are.

Many thoroughfares are rendered unsafe by the reckless rapidity of passing trolleys. As one turned a corner in a suburb of Milwaukee, it seriously injured a man, whose body we were horrified afterwards to discover on the tracks. The attention of the passengers was called to the accident solely by the jerking of the car; neither motorman nor conductor seemed interested; they moved on as if accidents were of common occurrence. Where several lines meet the danger is multiplied. On the southeast corner of Broadway and Twenty-third street, New York, the pedestrian hesitates before he ventures to cross the tracks over which bell-ringing electric cars constantly rumble. He is puzzled by seeing a fellow in uniform who stands in the middle and shakes a red or white flag into the faces of passing drivers. When the pedestrian finally gathers courage and lands safely at Seward's feet in Madison Square, he feels as if he had been in peril of his life. The danger is magnified when overhead the thunder of elevated trains increases his terror as it does at the junction of Thirty-fourth street, Sixth avenue and Broadway.

Congested city crossings are monopolized by wagons. Their drivers, anxious to get ahead of rapidly passing trolleys and of each other, block streets against unfortunate pedestrians. A man who is knocked down in some of the slow municipalities of Southern Europe is fined for his carelessness. Our drivers act as if this rule were applicable to our citizens. When the Jehu discovers the mischief he has done, he is more apt to curse his victim and escape, than stop and render assistance. Horsemen seldom recognize the fact that walkers have any right which entitles them to respect.

Policemen cannot keep order where their authority is questioned. In London, vehicles must form in line and drivers dare not move until a "bobby," stationed in the centre of street or square, gives the signal to proceed. A second signal orders the charioteers to stand still, and when one who is bid to halt does proceed, he is relegated to the rear of his line. This happened to the Prince of Wales shortly before he became king; his coachman considered he had the privilege of stealing a march on others, but the Prince forced him to submit quietly to regulations.

Passages for teams should carefully be separated from those for walkers. In old Chester, England, sidewalks have been built over arcades on a level with second stories of the abutting houses, to leave the entire street to vehicles. In Turin and other mediaeval cities promenaders are protected by enclosed arcades.

Continental cities generally prohibit the erection of structures that do not

correspond in appearance to surroundings, in height, to width of the street. Owners of the lots in the busy portions of our cities, regardless of neighbors and the public, have erected tall buildings of ungainly appearance, which not alone obscure daylight, but are a serious menace.

A well-known engineer claims to have made the alarming discovery that the foundations of certain Chicago skyscrapers, prototypes of all the rest, have began to corrode. At the same time authorities have removed the wise restriction which, for more than ten years was enforced, and by which the height of a building was restricted to 150 feet. The danger of collapse in New York is the uneven strength of the ground on which our builders place foundations. It will be intensified when it becomes honeycombed by numerous projected tunnels.

City air in summer is pregnated with the smell of animal excretion and vegetable decay in all those numerous streets where unwashed foreigners crowd into antiquated tenements. The density of the population in the tenth ward of Manhattan, for instance, exceeds 650 persons to the acre; no adequate provision for airing their habitations and washing their persons has been made. The last official census recorded the cleanliness in respect to sanitary condition of the slums of our cities as follows:

	Bad.	Fair.	Good.
Philadelphia	606	139	33 houses
New York	668	683	106 "
Chicago	709	100	22 "

Not one was classified as "excellent"! Such houses and streets should be flushed with an abundance of water, every morning from April till October, to make them endurable.

Of outdoor activity walking is best, because the exertion can be graduated according to strength; for this reason, if no other, the right of the pedestrian ought to be safeguarded. Instead of being a risk and burden, it could be made an attractive pleasure.

BOOK REVIEWS.

SANITATION.

Handbook on Sanitation. A Manual of Theoretical and Practical Sanitation. By GEORGE M. PRICE, M. D. New York, Wiley & Sons, 1901. 8vo, 317 pp., cloth, $1.50.

There is a growing demand for a compact and practical handbook for the use of sanitary inspectors, health officers, charity visitors, physicians, trained nurses and other persons who are professionally interested in sanitary work. The present work is disappointing, as it deals in the main with the inspection of New York tenements, and is therefore too local in character to prove valuable in other places.

The introductory chapters on the principles of sanitation, which deal with soil and sites, air, ventilation, warming, water-supply, disposal of sewage and plumbing, are too general to be of much service and lack definiteness. For example the important subject of cellars and how to make them dry, is dismissed in the following sentence: "By cementing the cellar with a *proper* cement of *suitable* thickness, dampness and ground air are prevented from entering."

Under the head of ventilation, illustrations are given of several devices taken from English text-books which are not at all adapted to American conditions. The average filter is very properly called a snare and a delusion, but no explanation is given as to why it is so. The remarks about sewer ventilation are equally vague and are likely to mislead.

Under plumbing, a cut, on page 73, of a saddle-hub is labeled "a pipe-bend." On page 81 it is said regarding house drains that "a three-inch pipe is sufficient for a small house," though nothing less than a four-inch drain would be allowed by any health board.

In short the book cannot be recommended to anyone seeking clear, explicit, and detailed information, which is what the average layman wants. It is to be regretted that the writer did not draw more from his personal experience as a health inspector and less from books.

New York City. CHARLES F. WINGATE.

CHICAGO STREET RAILWAYS.

The recent *Report of the Special Committee on Local Transportation* to the Chicago city council (December 16, 1901) and Mayor Carter H. Harrison's special message on the franchise question (January 6, 1902) make very interesting reading. In regard to municipal ownership and operation the report says:

"The immediate municipalization of the street railways of Chicago, as a practical proposition, most persons will readily admit, is out of the question. The wisdom of such municipalization in the future, whether near or remote, is an

open question, and in the opinion of your Committee it should be left open. While we do not wish now to commit the city definitely to the policy of future municipalization, neither do we wish to preclude the practical possibility of such action, if the people of the future shall desire such a policy. It is indeed unfortunate that the last General Assembly of the State did not enact the necessary enabling legislation to give to city councils full power to provide for future municipalization. If it were the interests of the companies alone that would be injured by delay your Committee might favor refusing to renew any franchise grants until such time as the desired enabling legislation should be secured. But the public is greatly interested in early improvement of Chicago's belated and inadequate transportation facilities, and to that end it should be prepared to consider the terms of an early settlement of the general franchise question, in so far as a settlement may be an important element in leading to improvement of service. However, because of the failure to secure desired legislation at Springfield, the settlement to be offered the companies now cannot be the same as it otherwise might have been."

The Committee then presents an outline of a franchise ordinance the adoption of which it favors "without waiting for further State legislation." This outline includes the following points:

(1) A twenty-year grant, reserving to the city the right to purchase at any time after ten years, if enabling legislation is secured; or, if the desired legislation is not secured, the right to terminate the grant and require the grantee to sell to some other corporation designated by the city council.

(2) Complete control by the city council of "everything pertaining to the operation of street cars, their running time, the kind of cars in use, heating, lighting and ventilation."

(3) An adequate system of down-town terminals, with due consideration of the ultimate necessity of subways in the heart of the city.

(4) A maximum fare of five cents and six tickets for a quarter, with universal transfers, so that a person may ride from any point in the city to any other for a single fare.

(5) The monthly payment into the city treasury of a percentage of the gross receipts of the company.

(6) The paving and cleaning by the company of eight feet in width of the street for single tracks and sixteen feet for double tracks.

(7) Annual reports by the company to the city council in accordance with forms prescribed by the city comptroller and free access for that officer or his representative to the company's books.

(8) All grants to a company to expire or be terminable at the same time.

(9) Sales or transfer of grants, consolidation of companies and leasing of lines to be prohibited except with the approval of the city council.

At the first public hearing on this report, held December 27, Mr. Walter L. Fisher, on behalf of the Municipal Voters' League of Chicago, commended the Committee's outline of policy and expressed "the overwhelming sentiment of the people that this street-railway question should be settled right and settled soon." In Mayor Harrison's message to the council on January 6 he outlined his own policy, approving most of the Committee's recommendations, but deprecating a hasty settlement. Mr. Harrison took a definite stand for delaying any renewal of franchises until legislation authorizing a provision for municipal ownership should be secured. He referred to the past experience of the city, saying that in 1883 when the existing grants were made, the question of municipal ownership was

discussed in the council, and the elder Carter H. Harrison, then mayor of the city, said in his message of August 6: "Before twenty years shall have elapsed the city's charter may be so amended as to empower it to purchase and own the roads, or purchase and sell to others on favorable terms." So the question of municipal ownership was thrust aside in 1883 pending enabling legislation from Springfield which has not yet been secured. This failure has been largely due, it is claimed, to the opposition of the traction companies. Mayor Harrison does not favor immediate municipal ownership and operation, but expects the conditions of the civil service to so improve that this policy will be feasible in the near future. As a guarantee of the protection of the city's rights, he demands the referendum on all franchise ordinances. This would enable the council to get the popular mandate in regard to the relative importance of a *right* settlement of the franchise question and a *speedy* one.

New York City. DELOS F. WILCOX.

MUNICIPAL HOUSING IN LONDON.

The Housing Question in London, being an account of the Housing Work done by the Metropolitan Board of Works and the London County Council, between the years 1855 and 1900, with a Summary of the Acts of Parliament under which they have worked. By C. J. STEWART, Clerk of the Council. London, P. S. King & Son, 1900. 8vo, 381 pp.

The elaborate title gives a good idea of the scope of this book, and within the field thus delimited practically nothing has escaped notice. The work opens with a resumé of the legislation, general and special, enacted since 1851, which was the first time that Parliament concerned itself with the problem. Thereafter, statutes were passed every few years, but the first really adequate and comprehensive act was not passed until 1890, which applied to all of Great Britain as well as to London.

Following this section, there is a full and complete account of the work done by the various local authorities, principally, of course, by the Metropolitan Board of Works and its successor—the London County Council—which came into being in 1889. From 1875—the first time when powers were conferred upon the Metropolitan Board of Works—to 1889, the Board spent over $8,100,000 in clearing 42 acres of insanitary areas. It was able to recoup itself somewhat, but the net cost was nearly $6,500,000. There were 22,868 persons displaced and 27,780 re-housed. Several other schemes had been started but were not completed when the Board ceased to exist, and the County Council took up the work.

In these 14 years, the Board had not erected a single tenement. It had condemned the areas, purchased the property, cleared away the rookeries and then sold sites to private companies to build upon. The County Council adopted a different policy, deciding to erect, rent and maintain the necessary dwellings. This course was forced upon it principally by the difficulty of getting companies or persons to purchase sites; slum districts are frequently not the best places for erecting dwellings, considering the large expenditures necessary to purchase the land. Thus, since 1889, the Council has almost invariably built upon some portion of the area cleared. Frequently new streets are laid out, old ones widened or open spaces provided, and a portion of the expense thus charged to general expenses of the County, but this almost never covers the entire cost.

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Including the dwellings that have been or are being erected, the County Council has provided for nearly 32,000 people at a total cost of nearly $14,500,000. Of this sum, nearly $6,000,000 is charged to the removal of insanitary areas, leaving the total amount invested in municipal dwellings—lands and buildings—about $8,500,000. The accounts for 1899–1900 show a surplus, after paying all expenses including interest and sinking fund charges, of $7,000 as to those sites upon which the Council elected to build. But upon those for which no purchaser could be secured and upon which the Council was therefore forced to build, there was a deficit of $43,000, leaving a total net deficit of $36,000.

The book also contains sections describing the work done by the vestries and district boards, both where they have assisted the County Council and where they have been assisted by it. In every instance, each scheme is treated in detail and plans are presented to show the new and old arrangements.

Other sections relate to Overcrowding and Workmen's Trains, which are most interesting and instructive. The latter shows that in 1896 nearly 100,000 workmen's tickets—reduced fares—were sold on an average daily, and that the number is steadily increasing.

The report closes with a number of tables showing the cost, area, rentals, accommodations, financial results, etc., of the various schemes. An attempt to unravel these and to construct the summaries from the data shows a weakness which is often found in statistical publications. In order to understand thoroughly such summaries and to avoid erroneous statements based thereon, it is necessary to know how they were made up and what each item means. Unfortunately the tables in the report are lacking in this respect, and should be made more clear by explanatory notes and interpretations. Until more care is taken to make tables more attractive and more easily explicable, the layman will continue to dislike statistics and disregard what ought to be a most useful method of ascertaining and stating facts. The omission in the book before us is all the more lamentable because it is deserving of praise in almost every other direction. It is a valuable public document and ought to set the pace for American cities. Unfortunately few of our cities have statistical publications of such high character. The citizens of London are to be congratulated upon the excellent documents published by County Council officials, and in the front rank stands the volume reviewed.

New York City. MILO ROY MALTBIE.

CHICAGO FINANCES.

Report relating to System of Municipal Accounts for the City of Chicago. Supplementary report. Letter transmitting report. By HASKINS & SELLS. Published by the authors, New York, 1901.

These documents embody the new system of accounts recently introduced into the city of Chicago. The student of city affairs should use in connection with these four other documents on the old system of accounts in Chicago; the latter are also published by the same firm. Taken together, these reports constitute the most elaborate, exhaustive and systematic work that exists in print on the accounts of an American city.

The investigation into the old system of accounts was undertaken over a year ago with the support of the Merchants' Club of Chicago. It revealed a situation so bad as to be almost inconceivable. The comptroller was the nominal head of

the system; but the treasurer, collector and other officers handling money had maintained a virtual independence. There was no record showing that the comptroller had ever audited their accounts, and their methods of accounting were so different it was in many cases impracticable to check the books of one officer by those of another. The county collector would report items aggregating sometimes a million dollars annually under the titles "Forfeited to State," "Judgments refused," "Errors," etc., and be credited with these without investigation, though he submitted no evidence in support of them.

In its main features the new system follows the practice already in use in some other cities. The comptroller is in all respects the head of the finance department. He has a check on the accounts of all the other officers. His auditing bureau ascertains the correctness of the returns made by those who either collect or spend money for the city. Payments are made by drafts signed by the comptroller and treasurer, instead of by the personal check of the treasurer, as heretofore. The comptroller's report will exhibit the true condition of the city's finances.

The amazing thing is that these sweeping changes are made without amending a single statute aside from the act passed in 1901, which eliminated the troublesome township collectors, and only seven slight amendments are suggested as desirable—two of them doing away with requirements that are obsolete. A single ordinance did it all after the accountants found out what needed to be done, when it had been supposed all along that the statutes chained the city to a vicious accounting system. This shows the value of employing expert service at times, even if it does cost something.

There are to be three parts to the comptroller's annual report: the balance sheet of assets and liabilities, the cash receipts and disbursements of the year, and the revenue and expense account. The statement of cash transactions is only a summary given on a single page. The statement of revenue and expense is very full. Revenue means, as it has heretofore, the money due the city on the year's transactions, whether collected during the year or not; expense means likewise the expense incurred by the year's transactions, whether it has been paid yet or not—what it has *not* meant heretofore.

The expense and revenue statement must necessarily be incomplete, as some receipts and disbursements will have to be made on account of it in succeeding years. It is not clear how these belated cash transactions are to be handled, either in the accounts or in the comptroller's report, nor how the balances carried on from year to year may not, as in the past, become largely fictitious by carrying along as a resource taxes levied but which cannot be collected. The best way to avoid this difficulty would seem to be to adopt the plan followed by some cities, notably in California, not to treat the unexpended revenue of the year as a resource in the following year, but to give in the comptroller's report for each year a condensed statement of the condition of the account for several preceding years.

All through the forms for the part of the comptroller's report devoted to revenue and expense, a parallel column is provided for the corresponding figures of the preceding year, and still another for the amount of increase or decrease. It is doubtful if this compensates for the extra space required. The appropriations for the year current at the time the report is issued would be more useful.

Some slight improvements might be made in classification. There are four different classes of taxes: taxation, licenses, franchise tax, and insurance tax. It would be better to put these into a group by themselves. Hospitals, municipal

lodging-houses, and outdoor relief are included under *public safety*. They should be in a separate group. The accounts of the department of electricity, which is virtually the department for public lighting, include items for police and fire alarm telegraph and for the crematory—services which have nothing to do with the main work of the department. If it is necessary to keep this arrangement in the comptroller's report the foreign items should be made as easily separable as possible by being placed together at the end of the report for the department; a total for the department might be made without them.

But these are small matters. The system in its main features should receive unqualified approval. The influence it will have in improving the accounts and financial reports of municipalities in the central and western states is incalculable.

Oshkosh, Wis. F. R. CLOW.

ELECTRICAL UNDERTAKINGS IN GREAT BRITAIN.

Manual of Electrical Undertakings and Directory of Officials, 1901–1902. By EMILE GARCKE. (6th Edition) London, Mowbray House, 1901. 8vo, 976 pp., cloth, 12s. 6d.

We have had frequent occasion to commend the previous editions of this very useful and valuable manual. The present edition is more complete in every way than any previously issued and contains the very latest information regarding electrical undertakings of every sort, including lighting, traction, power, telegraph, telephone and manufacturing companies. Besides, there are sections upon British legislation in 1900 and 1901, including orders by the central authorities, colored diagrams and maps, analyses of financial and other statistics, directories of officials, etc.

Those interested in the question of municipal ownership will find some very interesting tables in the first part of the volume. Six cities have been authorized to construct municipal telephones, but the amount of capital they have invested is as yet not large, only three municipal systems being in operation. The movement for municipal ownership is only just starting.

The figures for electric street railways show a much larger proportion of municipal activity. There are 125 private companies as compared with 47 municipal plants. The former have invested nearly $200,000,000, the latter slightly over one-fourth as much—$52,000,000. But there has been a tremendous increase since the last volume was issued in 1901, when there were only 18 municipalities operating electric street railways with a capital of somewhat over $13,000,000. According to the annual published in 1899, there were no municipal electric street railways in Great Britain.

The largest amount of municipal activity is, however, to be found in the case of lighting plants, 142 private and 192 municipal plants having been authorized, involving a capital expenditure of $92,000,000 and $95,000,000 respectively. Of course a considerable number of these are not yet in actual operation.

A comparison of private with public operation is very suggestive. We quote the following data:

Year of Report.	% of Profit on Capital Expended.		Price Obtained for Current.	
	Private.	Municipal.	Private.	Municipal.
1896	5.49	4.92	6.08d	5.32d
1897	6.33	5.61	5.77d	5.18d
1898-99	6.54	5.73	5.62d	4.68d
1899-00	5.51	5.55	5.51d	4.35d
1900-01	5.45	4.90	5.26d	4.06d
1901-02	5.00	4.30	4.91d	3.82d

It is somewhat unfortunate that these figures do not deal with all of the plants, but if the undertakings considered are representative, they show up municipal operation in a very favorable light. It is probably true that they are at least not unfavorable to private enterprise, as Mr. Garcke is interested in many private companies and is opposed to municipal ownership, so that he would hardly publish material which was unfair to the cause in which he believes.

Assuming, therefore, that the statistics given are at least fair to the private companies, it follows that the average price for electric lighting is 1.12d. (2.24 cents) per Board of Trade unit lower under municipal than under private operation, over 20 per cent. lower. And since 1896—when the first volume was issued—the difference has grown greatly.

Comparing the profits, we find that the figures somewhat favor private ownership; that is, the rate of profit is somewhat larger under private than under municipal ownership, although the difference is not so great as the difference in the price of current, and in 1899 the municipalities made a greater rate per cent. than the private companies.

Doubtless succeeding volumes will carry these comparisons still further so as to show the relative cost of management, distribution, generation and capitalization per unit.

Anyone wishing current statistics as to electric lighting will find the weekly issues of the *Electrical Times* very valuable. The very latest reports are published and the tables are revised every week.

M. R. M.

AMERICAN CITY FINANCE.

A Comparative Study of the Administration of City Finances in the United States, with special Reference to the Budget. By Frederick R. Clow, Ph. D. Publications of the American Economic Association, 3d series, Vol. II., No. 4. New York, Macmillan Co., 1901.

The surest test of the government of a city is found in the wisdom and integrity of its financial management. Success in financial administration will depend in part on the general organization of the city government—the relations between powers and the methods of selecting officers. Still more will it depend on the personal character of the city's officials, and on the political and social conditions which so largely determine that character. But the machinery of financial

administration is a matter of no small importance in securing efficiency and honesty. Dr. Clow has given us the fullest information thus far available concerning the existing methods of municipal finance in the United States, particularly as regards the appropriation of money and the control and accounting of its expenditure. The study covers 102 cities, including all those having a population of over 80,000. It is based on the charters and municipal reports of all these places, and has been supplemented by personal interviews with financial officers of 23 cities.

The monograph is interesting as showing the wide variety in methods employed by different cities, and the crude character of the methods in most of them. While the author has not undertaken to enter into detail as regards the way in which the respective methods work, or to criticise them thoroughly from the standpoint of scientific finance, he gives us enough light in these directions to serve to a considerable extent as a guide in distinguishing the better from the worse. Indeed merely to compare without criticism the more highly developed financial methods of such a city as Boston or Cleveland with the unsystematic practices of many smaller and of even a few large cities, can scarcely fail to show the directions in which progress must be made.

The monograph is, as indicated in the title, particularly full in its treatment of the budget. In the introduction the relation between the city and the state, in its bearing on the finances, is set forth. The powers of cities are almost everywhere closely restricted. In some cases the state government has gone so far as practically to fix all the important items of city expenditure. Very often there are limitations on the aggregate expenditure or on the tax rate. Such restrictions, combined with the innumerable demands which modern progress makes on city administration, have, in Dr. Clow's opinion, caused the cities in many instances to develop methods of estimating revenue and making appropriations more systematic and satisfactory than those of our state and Federal governments, which usually make little effort closely to balance receipts and expenditures. Nevertheless there are many cities which do not establish in advance detailed and binding limits of expenditure for the respective services. It is in only a comparatively few of the largest cities that elaborate budgets of appropriations are made.

The general tendency toward transfer of power from the municipal legislature to the executive is illustrated with great force in the budgetary methods. Even where the city charter does not specifically confer the chief control of expenditures on executive officers, in practice the mayor or the comptroller, or a board of executive officers, by revising the estimates to be laid before the city council, virtually makes the budget. The latest device, which took its origin in New York but has been adopted by Baltimore, Cincinnati and several other large cities, is to constitute a small board of estimates, under one name or another, which makes the first draft of the appropriations. The mayor and comptroller (or auditor) are invariably members of this board, the other members being variously chosen in different cities. Our author holds that the difficulty of properly framing the budget is so great, and detailed knowledge of actual administration and expenditure so necessary, that the city council cannot be expected to take an active part in the task, unless some method of securing direct responsibility to and leadership of the legislature on the part of the executive—as in the cabinet system—shall be introduced. Into the further question, whether such a change is desirable, whether our decaying city councils should be restored to a position of some dignity, Dr. Clow naturally does not enter. His investigation cannot fail to bring home, however, the wide divergence between the present weakness of the municipal legislature

in matters of expenditure and that principle which was so long considered a fundamental tenet of democratic government, that the purse strings should be held by the direct representatives of the people.

Among other topics which are covered quite fully in this study are the degree of completeness and unity in the city budget, the accuracy—too frequently the lack of accuracy—in the estimated revenue, the methods of providing for deficiencies or for extraordinary outlay in the entire service or as regards particular items, and the time of preparing the budget.

Another chapter of the monograph deals chiefly with the organization of the financial departments. It appears that in all the largest cities, and in most of the medium-sized ones as well, a department of accounts and control has been established, distinct from the treasury itself. In not a few cases the comptroller or auditor has become an extremely powerful officer, his functions in keeping accounts and controlling the payment of money being even less important than his work as general policy-maker in the financial administration. The lack of a sufficiently high conception of the duties of this office in some cities, the absence of the office itself in others, are obvious defects. The unsatisfactory character of the financial accounts of many cities also appears clearly in Dr. Clow's study, which describes the characteristics of the existing accounts and reports with considerable fullness.

The subjects of taxation and debt management are presented in merely the barest outline, fuller treatment being reserved for future studies. The methods of managing municipal property and franchises, which should contribute far more to city finances than they usually do in this country, are passed by entirely. Much therefore remains to be done even in describing the formal characteristics of the administration of municipal finances. We need likewise, as Dr. Clow fully recognizes, detailed studies of the actual way in which the financial machinery works—not necessarily in such a large number of cities as are covered by the present author, but in a sufficient number, and under sufficiently varying conditions, to enable us to generalize with safety as regards the relative merits of different methods. The importance of the field can scarcely be exaggerated. At the last annual meeting of the American Economic Association Dr. Clow requested the appointment of a special committee to study municipal finances. Whether it will be possible to find members of the Association who are willing to enter into such investigations or not, it is obviously desirable that more students of finance and persons interested in good city government should set themselves earnestly at work in the field in which Dr. Clow has made such a valuable contribution.

Cambridge, Mass. E. DANA DURAND.

THE SOCIAL EVIL.

The Social Evil with special reference to Conditions existing in the City of New York. A Report prepared under the direction of the Committee of Fifteen. New York, Putnam's Sons, 1902. 8vo, 188 pp., cloth, $1.25.

This report consists of two parts and two appendices. Part I. is a treatise prepared for the Committee by Mr. A. S. Johnson, which gives a history of prostitution and the various methods of dealing with it adopted by ancient and modern nations.

The studiously "scientific spirit" employed in treating a question so vitally connected with public and private morals cannot fail to produce a painful impres-

sion, and it is with relief that the reader turns to Part II., "Recommendations of the Committee." These recommendations refer necessarily to the special conditions existing in the City of New York, and the bulk of them are thus summarized by the Report itself (p. 179):

"The better housing for the poor, purer forms of amusement, the raising of the condition of labor, especially of female labor, better moral education, minors more and more withdrawn from the clutches of vice by means of reformatories, the spread of contagion checked by more adequate hospital accommodations."

In addition to the above recommendations, the wisdom of which it is scarcely possible that any one could doubt, there are two others which will give rise to question.

On page 176, the first is thus presented:

"But, above all, the Committee recommend a change in the attitude of the law. As it stands at present, the law regards prostitution as a crime. If we are ever to escape from the present impossible conditions, it seems imperative to draw the distinction sharply between sin and crime. The proposition is to exclude prostitution from the category of crime. We hasten to add that the proposition should by no means be understood as a plea in favor of laxer moral judgments. A sin is not less odious because it is not treated as a crime. Sins may even be incomparably more heinous than offenses which the law visits with punishment. Nevertheless some of the most grievous sins are not subjected to legal penalties, simply because it is recognized that such penalties cannot be enforced, and a law on the statute books which cannot be enforced is a whip in the hands of the blackmailer. Corruption in the police force can never be extirpated until this prolific source of it is stopped. * * * All public obtrusive manifestations of prostitution shall be sternly suppressed. Not prostitution itself, when withdrawn from the public eye so as to be noticeable only to those who deliberately go in search of it, shall be punishable; but all such manifestations of it as belong under the head of public nuisance."

In this recommendation a solution of the tremendous difficulty of dealing by law with the problem of prostitution seems to have been reached. It is not proposed that it shall be licensed; it is not proposed that it shall be regulated; nor on the other hand is it proposed to allow vice to flaunt itself in public, insulting the virtuous and tempting the weak. The proposal is to relinquish the impossible attempt to prevent sin by law, an attempt which has resulted in the incredible evils connected with police blackmail in the City of New York, and to require only that the police shall maintain public decency.

The second radical proposal is the following (p. 179):

"In addition we would recommend the creation of a special body of morals police, * * * selected on grounds of exceptional judgment and fitness, to whom and to whom alone should be entrusted the duties of surveillance and repression contemplated in the above recommendations."

It is scarcely open to question that it would be unwise to place any body of *men* in the relation to the prostitutes of the city which the proposed "morals police" would necessarily hold. Men must in the nature of things be either too severe or too lenient in their treatment of such women, and in neither case can they have a desirable influence upon them. Were the proposition to have a body of special *women* officers, "selected on grounds of exceptional judgment and fitness" (and *well paid*) to undertake these duties, there is no doubt that much good would result.

But however great may be the value of the Report of the Committee of Fifteen as regards the actual conditions existing in New York, by far its greatest importance is in connection with the general question of the best means of dealing with the social evil in cities.

For a generation in England and on the Continent of Europe a struggle for the abolition of the system of the "State Regulation of Vice" existing in European cities has been going on, the "Regulationists" asserting that in their system was to be found the only hope of diminishing the fearful ravages of the diseases which result from prostitution, and the "Abolitionists" maintaining that so far from checking disease, this system actually increased the very diseases it sought to stamp out, because it acted as a direct encouragement to vice by giving it the sanction and protection of the State. The Committee of Fifteen, commenting upon the paper prepared for them by Mr. Johnson, make the following statement (p. 171): "A careful consideration of the foregoing report points unmistakably to the conclusion that the so-called system of regulation is not a radical or adequate remedy for the evils connected with prostitution, even in their merely physical aspect." An authoritative conclusion of this character, after a study of the subject which occupied many months, is invaluable, and cannot fail to strengthen most powerfully the hands of the abolitionists all over the world.

The fact that this report, published on January 2, 1902, follows so closely upon a report which reaches the same conclusions, published on December 21, 1901, by "The Committee of Seven of the Medical Society of the County of New York, on the prophylaxis of venereal diseases in New York City" (Prince A. Morrow, M. D., Chairman), adds still greater value to the conclusions of each. The Medical Committee, after one year devoted to a study of the question, makes the following statements:

"* * * The Committee does not recommend the continental system of regulation as a remedial measure; while it has the incontestable advantage of hygienizing a limited number of public women, the evidence is by no means clear and conclusive that it materially diminishes the sum total of venereal diseases in countries where it has been most perfected and employed. It has so many countervailing disadvantages, it is vulnerable from so many points of view, that the movement for its modification or abolition in many European countries will probably result successfully"

And again: "It will be seen that no specific 'State or municipal legislation for the repression and control of prostitution,' as was contemplated in the resolution of the Society creating this Committee, has been recommended, and this from the firm conviction that such repressive measures would prove a failure."

It is most encouraging that these two committees, each composed of men peculiarly fitted, morally and intellectually, for the tasks undertaken by them, should have reached the same conclusions, and should, indeed, make in effect the same recommendations. The immense value of these two reports cannot be over-estimated, each strengthening and confirming the conclusions of the other.

The two appendices to the Report of the Committee of Fifteen describe respectively "The Raines Law Hotels" and the "Present Conditions in New York," and in the latter is given, under the heading "The Cadet and his Victim," an account of the appalling degradation of young men, "averaging from eighteen to twenty-five years of age, whose occupation is professional seduction," and who thus secure "a staff of girls and live upon their earnings."

That these young men have grown up in the streets of our city, that they have been educated in our public schools are facts which should fill with shame the soul

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of every citizen of New York, for it is not youthful passion, it is not any natural, even though perverted, instinct, which leads these American youths to tempt and seduce unsuspecting girls, but only a devilish greed and love of money. They lay plans, time after time and as a business, to decoy innocent girls from their homes; they even pay court to them and marry them with the consent of their equally deceived parents, only to place them in brothels, where they are forced into a life of suffering, degradation and shame, and where they become physical wrecks. The existence of such almost incredible baseness has been proved by the trial and conviction of a number of these horrible products of our "civilization."

What remedy is there that can meet so tremendous an evil? Those proposed by the Committee of Fifteen are all needed and will all help, but above all we must have moral and religious teaching for our young people, which will appeal to the higher nature and render such perversion impossible.

No review of the Report of the Committee of Fifteen should close without acknowledging the great debt due to the members of that Committee for the great and disinterested service they have rendered to New York, both in their practical work and in presenting this Report.

New York City. JOSEPHINE SHAW LOWELL.

MUNICIPAL ENGINEERING.

Municipal Engineering and Sanitation. By M. N. BAKER. New York, The Macmillan Company, 1902. 12mo, 317 pp. Cloth, $1.25.

A book for which many have been looking.

To say that the average citizen has found uninteresting the majority of books upon engineering and sanitary problems in cities is no reflection either upon the average citizen or the character of the works published. It is extremely difficult, one may say almost impossible, to treat these problems in an accurate and scientific way, and yet so interestingly as to attract and inspire the laymen. Indeed, until recently the audience to which the popular book upon these subjects would appeal has been so small as to make questionable the publication of such a work. Of late, the increasing importance of municipal engineering and the rapidly growing interest in all municipal problems has developed to a marked extent the demand for a popular, yet accurate work.

As far as I am aware, Mr. Baker's book is the first attempt to meet this demand. Apparently it is not intended for the skilled engineer, but rather for the average citizen who desires to know the fundamental facts regarding water supply, sewerage, street cleaning, street paving, fire protection, smoke nuisance, harbor facilities, subways for pipes and wires, etc.

About one-quarter of the book is devoted to problems of municipal administration, including the organization of departments, the question of day labor *vs.* the contract system, municipal franchises, uniform accounting and finance.

We recommend this book without hesitation, and only regret that the whole field of municipal activity and city problems has not so well been worked over for the average citizen as the portion which Mr. Baker has delimited. For example, municipal franchises have been very slightly treated, except from the point of view of municipal ownership. Even admitting that this is the tendency, it is still true that franchises will continue to be granted for several generations, and there is great need for a book outlining the experience and analyzing the principles along which franchises have been and are being granted. However, we probably shall soon see many books similar to the one Mr. Baker has given us.

M. R. M.

BOOK NOTES.

The Councillor's Manual is "a guide to Scottish local government in burghs, parishes, and counties," by Abijah Murray, chief clerk of the Local Government Board for Scotland (Edinburgh, William Green & Sons, 1902, 8vo, 1121 pp.).

This manual is intended more for the public official than for the citizen, being composed principally of the important acts regarding local government in Scotland. The literature upon this subject is, however, not very extensive, as most works dealing with municipal affairs relate principally to England and English cities. The Manual will, therefore, be found very useful to those who wish to familiarize themselves with the principal statutes.

A Political Primer of New York City and State, by Miss ADELE M. FIELD (New York, League for Political Education, 1902. 16mo, 118 pp., paper, 50 cents), has just appeared in its third edition. When the first edition of this useful handbook appeared, we called attention to it at length. The reorganization provided for under the new charter has made a new edition necessary, and so far as a cursory examination shows, the volume before us is an improvement over its predecessors, and will be found very useful to those wishing quickly to ascertain the essential facts regarding the government by which New York city is ruled.

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The following subject index is intended to continue the work begun in the first number of MUNICIPAL AFFAIRS. The March, 1901, issue was entirely devoted to "A Bibliography of Municipal Problems and City Conditions," which contained all of the indices previously published, revised, rearranged and made complete to January 1, 1901. So far as possible, all books, pamphlets, reports and magazine articles of interest to students of city government which have appeared in the last three months—December, 1901, to March, 1902—are included in the following list. Future numbers will contain similar indices for each preceding quarter.

In the arrangement of the references, the following plan has been adopted: All relating to any one city have been grouped under that city. Thus, references on Sewage Disposal in Berlin are found under **Berlin,** subhead Sewage Disposal. The same is true as to countries. The references to Water Supplies in the United States, for instance, are under **United States,** subhead Water Works. In each case, cross references to the city and country have been placed under the main topic. Thus, for example, immediately following the head **Lighting,** there is a list of the cities and countries under which is found additional material on Lighting, but which is not general in character, relating only to the city or country referred to.

Upon classifying the material according to this plan, a small number of unclassifiable titles are found which resist every device of the bibliographer's art; titles referring neither to any particular city, nor country, nor single topic. These, together with the important general works, have been given special prominence by being grouped at the beginning of the Index under the rubric **City Government, General and Unclassified.** A similar plan has been followed in each country and city.

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RICHARD M. HURD—Born in New York 1865. Educated abroad and at St. Paul's School, Concord, N. H. Graduated at Yale, 1888. Is assistant secretary of the United States Mortgage and Trust Company. Has made a theoretical study of the principles controlling the value of city land in connection with the making of mortgage loans in the principal American cities. Has lectured at several universities on this subject.

TORRINGTON GEORGE ELLERY—Born at Mount Gambier, in the State of South Australia in 1869. Educated at Norwood Grammar School and Whinham College, Adelaide. Is a justice of the peace and is officially connected with municipal work as town clerk of the City of Adelaide and as secretary to its Board of Public Health. He is also branch secretary of the Royal Humane Society of Australasia, vice-president of the Institute of Hygiene and Bacteriology, member of the executive council of the Local Government Association of South Australia, and a member of the Municipal Officers' Association of Great Britain. Has written extensively in the English and Australian press on public health and municipal matters. Is a recognized authority in Australia on municipal law and procedure.

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EFFREN MAGRINI—Born at Comitini (Sicily) in 1876. Studied at the University and the School of Engineering of Turin; received the degree of industrial engineer in 1899 and that of electrical engineer in 1900, from the Italian Industrial Museum at Turin. Appointed in 1900 assistant in industrial economics and legislation at the Industrial Museum, and technical assistant in the Laboratory of Political Economy. Member of the Italian Electrotechnic Association, contributor to the "Germinal," "Rivista Municipale di Torino," "Rivista Tecnica," "Progresso" of Turin, "Tramway and Railway World" of London, correspondent for the "Mois Scientifique et Industrial" of Paris. Member of the committee to report on the question of Labor Contract to the fourth Italian Congress of the Italian Economic Societies, and member of the executive committee of the popular school of electrotechnics in Turin.

FREDERICK A. WOOD—Graduated from Dartmouth College; received degree of Ph. D. from Columbia in 1894; doing special work in economics and finance. Has since been engaged in journalistic work in an editorial capacity for papers in Buffalo and Boston. Has written *The History of Taxation in Vermont*, published by Columbia University, and *A New England Democrat of the Old School*, in the New England Magazine for July, 1901.

LOUIS WINDMÜLLER—Born in Münster, Germany, 1835. Educated at the gymnasium. Came to New York in 1853, where he has since been engaged in business as a merchant. In politics is a sound money Democrat; supported Cleveland on the tariff issue and McKinley on the financial issue. In municipal politics is an independent. Besides campaign articles, has written on various subjects, chiefly questions in political economy in various magazines and other publications. Is a member of many social and political clubs.